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## Observations
ON
# THE NATURE AND SYMPTOMS OF CARDIAC INFECTION IN CHILDHOOD.

BY

F. J. POYNTON, M.D., F.R.C.P.LOND.,

PHYSICIAN TO UNIVERSITY COLLEGE HOSPITAL; SENIOR PHYSICIAN TO OUT-PATIENTS, THE HOSPITAL FOR SICK CHILDREN, GREAT ORMOND STREET.

## II.—RHEUMATIC HEART DISEASE.*

*First Attacks of Rheumatism in Childhood.*

THESE bring us to the threshold of the early development of organic disease. Among such cases we find all grades of severity, from those—fortunately rare—which prove rapidly fatal, and in which the infective element reaches its acme of intensity, to those which are so transient and vague that we are left doubtful of their significance. From a study of the latter we realize that a considerable number elude discovery by parents and doctors, and that as a result the early detection of cardiac affections can be but a relative accomplishment, the accuracy of which will only be increased by continual improvement in the education of the public and in our clinical methods.

It is here that a general idea of the relative frequency of the well recognized manifestations of the disease becomes of some practical importance, and the following figures, based upon 524 examples which I believe to be first attacks, may be of service. These figures, however, can only be of relative value, for the proof that an attack was actually the first is often difficult.

When these children (all under twelve years of age) were first seen at the hospital the following conditions were present:

| | | |
|---|---|---|
| Heart disease | in | 293 |
| Chorea | ,, | 268 |
| Arthritis and arthritic pains | ,, | 267 |
| Sore throats | ,, | 147 |
| Nervous manifestations other than chorea | ,, | 80 |
| Anaemia | ,, | 78 |
| Abdominal symptoms | ,, | 52 |
| Cutaneous manifestations | ,, | 39 |
| General wasting | ,, | 39 |
| Nodules | ,, | 22 |
| Epistaxis | ,, | 8 |
| Nephritis | ,, | 2 |

Two important groups may be recognized:

1. Cases with sore throat, arthritis, and morbus cordis.
2. Cases with chorea and morbus cordis.

For reasons that I have given in *Researches upon Rheumatism* I have included all cases of chorea as rheumatic in origin.

The sex incidence was as follows:

| | |
|---|---|
| Females | 346 |
| Males | 169 |

In 9 the sex was overlooked.

The percentages in this series were approximately

| | |
|---|---|
| Females | 69 |
| Males | 33 |

As nearly as possible 2 to 1.

Age incidence in 364 cases:

| | | | |
|---|---|---|---|
| One year and under | 4 | 6–7 | 38 |
| 1–2 | 3 | 7–8 | 63 |
| 2–3 | 13 | 8–9 | 37 |
| 3–4 | 25 | 9–10 | 45 |
| 4–5 | 38 | 10–11 | 37 |
| 5–6 | 40 | 11–12 | 21 |

### CLASSIFICATION OF THE CHIEF LESIONS OF RHEUMATIC HEART DISEASE.

I think the clearest and most instructive method of approaching the subject is to commence with the earliest and often the least severe cardiac lesion—acute dilatation. This is an essential feature in the history of rheumatic cardiac affections, and must be clearly recognized. Then will come for description the most severe and most characteristic event—an acutely fatal carditis in a first attack. From these latter cases we learn the true meaning of a cardiac infection. Next will follow the three cardinal lesions of the textbooks—pericarditis, endocarditis, and myocarditis—which lead to the consideration of recurrent carditis and the final stages of infective carditis.

Whatever classification is adopted, the element of carditis will be found frequently complicating the individual lesions, but I shall endeavour to avoid a troublesome repetition of symptoms and consider the subject only with the view of illustrating special features of the rheumatic infection.

### ACUTE DILATATION.

There are all grades in the severity of acute dilatation. In very rare cases it may prove fatal without endocardial or pericardial involvement. Far more frequently it occurs with some mitral endocarditis. Again, it is the chief cause of cardiac failure in recurrent attacks of carditis. Lastly, there is a large group in which the dilatation either is not severe and may be recovered from rapidly, or may be slow in course and intractable.

We are concerned here with the mild acute cases recovering rapidly. The more severe and the chronic cases will be considered later.

When it is recognized that some degree of dilatation may be the only cardiac lesion, and also that it complicates all the more severe rheumatic cardiac injuries, it will be evident that this is not only the earliest clinical evidence we possess of rheumatic heart disease, but also the most frequent.

I advocate the value of making careful outlines of the deep cardiac dullness in this lesion and of tracing these outlines on to paper for future reference. Each outline should have fixed points, such as the left nipple and mid-sternum, marked on it, and should be completed with the date and a brief synopsis of the symptoms and signs. Though I am no believer in a rigid dependence upon cardiac percussion it is remarkable how accurate the results become by persevering with this rather laborious method. From such an experience we learn not only to appreciate the reality of simple dilatation but also to detect the part it takes in acute pericarditis, and in the exacerbations of rheumatism in hearts already injured by the disease. Another point we learn is the remarkable rapidity with which dilatation sometimes occurs even when a child has been in bed for some days. Without special care this may be easily overlooked, but it is quite in accord with other events that may happen to a rheumatic child while resting in hospital. For example, a sore throat may suddenly develop, or chorea commence, or an arthritis show itself. These outbursts of infection constitute one of the peculiarities of the disease, and they suggest the sudden influx of a fresh wave of infection after the earlier one has been dealt with by the tissue cells.

#### *The Signs and Symptoms of Acute Dilatation of the Heart of Mild Degree.*

The chief signs of acute dilatation of mild degree are not difficult to ascertain or to remember when once they have been thoroughly studied, and may be summarized as follows:

If the child is leading its usual life there will be found shortness of breath, pallor, and palpitation, and there may even be a fainting attack. The pulse is quickened, and easily compressible.

The impulse of the heart is enfeebled and the cardiac dullness reaches to or beyond the left nipple line, and may be increased to the right. At the impulse the first sound is shortened, and at the pulmonary base the second sound is accentuated and may be reduplicated. Over the mitral area a soft systolic bruit may be audible, which is often at its maximum just internal to the impulse, and is not conducted plainly toward the left axilla. There will probably be a slight rise in the temperature.

From the above description it is apparent that it may be far from easy to decide whether in any given case there is together with the dilatation some endocarditis of the mitral valve. A question I have had put to me is how to distinguish these two lesions, and the answer, though not difficult to give, is necessarily incomplete.

If there is mitral endocarditis of some severity the apical murmur is conducted towards the axilla, and even if not permanent will not disappear for many months, and long after the soft murmur of a dilatation will have vanished. Further, there is usually evidence of hypertrophy of the left ventricle supervening upon the dilatation. If the endocarditis is slight

* The first article was printed in the JOURNAL of March 2nd, 1918.

the murmur will nevertheless persist after all evidence of dilatation has disappeared. There remain a certain number of cases in which the dilatation is slow in recovery, and also some others in which in all probability a valvular murmur disappears with unusual rapidity, and then we may be in doubt. The uncertainty in the latter case is not in reality of practical importance, for if the murmur disappears and the heart becomes sound we can but be satisfied. If, however, the dilatation is more stubborn than usual there will be the signs of myocardial feebleness, and for a considerable time we must remain in doubt as to whether or not an endocarditis is responsible for this delay.

It is clear, then, that a satisfactory answer to the question sometimes requires time and repeated observation before it can be given.

There is no doubt, I think, that the rapid development of acute dilatation accounts for some of the cases in childhood in which, after a slight arthritis, the patient has been allowed to return quickly to ordinary life, and has then become suddenly short of breath or has collapsed with a syncopal attack. A thorough understanding of this possibility will serve as an added warning to watch carefully the early days of what may seem a very mild attack of rheumatism.

## FATAL FIRST ATTACKS OF CARDITIS.

From the least severe of the rheumatic cardiac lesions—acute dilatation of slight degree—I pass now to the most severe, which brings into prominence the part taken by infective processes in human heart disease, and illustrates how completely they may destroy all attempts at recovery of the mechanical balance of the circulation. In such cases we must expect to find symptoms of great severity and of an unusual nature—for example, shivering attacks, vomiting, and diarrhoea, great muscular prostration and extreme illness; and we are also impressed by the rapid progress made by the cardiac disease. Thus pain over the precordium will be swiftly followed by severe dilatation and cardiac excitement, pericarditis will rapidly become general, and endocarditis appear. In a week or two the heart is irreparably damaged. It is not, however, the pericarditis or valvular disease that alarms us most, but the general cardiac infection and the failure of the general vitality from the virulence of the disease.

These fatal first attacks are rare—and they are more often met with in young children or in those with a strong hereditary tendency to rheumatism.

I would draw particular attention here to the answer that these severe cases gives to those who hold that rheumatism is an attenuated pyaemia. A study of them must, I think, convince us that the illness is of a deadly virulence, and yet, as the necropsies prove, never approaches to the character of a pyaemia. The poisons may be chemically allied to those of pyaemia, but they certainly are as special in their action as the poisons of any other specific disease.

The fifteen cases upon which these observations are chiefly based fall into two main groups:

(*a*) Fulminating cases of acute carditis.
(*b*) Insidious cases in fragile children of feeble constitution.

In this latter group the disease is deceptively quiet in its onset, but none the less deadly. The four following examples well illustrate these fatal forms of carditis—the first three the fulminating group, the last the asthenic.

*Example 1.*

A boy under 5 years of age, with a rheumatic history on the father's side, was seized with general illness a week before admission to hospital. At the outset he was prostrated with vomiting and diarrhoea and pains all over the body, and on admission he looked very pale and ill. There was arthritis of both knees, and there was great dilatation of the heart with a rapid pulse (140 per minute), and a systolic mitral murmur. Two days later general pericarditis was discovered, and bronchopneumonia developed. The temperature ranged between 103° and 100° F. The course was rapidly downhill, the liver became palpable, and slight oedema appeared. Restlessness and a running pulse, with some albumin in a scanty urine, followed, and death occurred fourteen days after admission.

The necropsy showed recent pericarditis, great dilatation, and early mitral endocarditis. The diplococcus was isolated from the pericardial, pleural, and arthritic exudations, and from the cerebro-spinal fluid.

*Example 2.*

A girl, aged 3½ years, was admitted to hospital very ill and with signs of severe cardiac disease. Her father had suffered from rheumatic fever and a sister had died of the same disease. Four weeks before admission, after developing a sore throat she became generally ill, with pains all over the body and swelling of the hands and ankles.

In hospital sour perspirations were noticed with high fever; dilatation, general pericarditis, and mitral endocarditis followed. Later nodules appeared together with the usual signs of cardiac failure. Finally all food was refused, and the child died after lingering for five weeks.

*Example 3.*

A boy, aged 7½ years, had suffered ten days before admission with general malaise, diarrhoea, sleeplessness, and cough, rapidly followed by arthritis of the ankles, fingers, toe-joints, and erythema multiforme. The pain disappeared and three days later he was allowed to get up. The same night he became delirious. When admitted to hospital there was severe carditis and he died six days later of syncope.

The necropsy showed a large pericardial effusion with simple aortic and malignant mitral endocarditis. Reference will be made later to this most remarkable case.

The next example illustrates the asthenic form of fatal carditis:

*Example 4.*

A girl, aged 4½ years, who was pale, fat, and flabby, had suffered for some weeks before admission from indefinite illness. The chief early symptoms were muscular feebleness and general prostration, with progressive pallor and loss of appetite. Then there developed a slight but definite chorea. When admitted the child was very ill and the pulse rapid (130), the heart was greatly dilated and the sounds faint with a soft systolic apical murmur. The next day general pericardial friction became audible. The temperature ranged around 100° F., and the extremities were cold. There was no sign of rallying to treatment and four days later she died from cardiac failure, the temperature rising in the last twenty-four hours to 104° F.

The necropsy showed recent universal pericardial adhesions, great dilatation, mitral and tricuspid endocarditis, plastic pleurisy on both sides and an *ante-mortem* thrombus in the left internal jugular vein.

These cases give a general indication of the clinical course of this most fatal form of rheumatic heart disease. We do not see cyanosis and distended jugular veins. There is no pronounced development of oedema with great enlargement of the liver. The child is more often ashen pale, the liver palpable, and the oedema a mere puffiness of feet and ankles. Death is often sudden from a terminal syncope, and the general appearance one of a severe toxaemia with a high degree of oxygen want.

In cases such as these Dr. Paine and I have demonstrated and isolated the strepto-diplococcus, a result only to be expected from the experience of bacteriologists studying other virulent infections.

## RHEUMATIC PERICARDITIS.

The consideration of the rheumatic lesions pericarditis, endocarditis, and myocarditis, apart from carditis, is necessarily artificial, but is essential on account of their individual importance.

Pericarditis is placed first here because of its gravity. It is in general terms a mark of a severe infection, and is repeatedly met with in fatal carditis. One hundred and fifty cases in children under 12 years of age showed at necropsy that the pericardium was adherent wholly or in part in 113 cases, and in only 9 cases was it stated to be healthy. In only 6 cases were more than 3 oz. of fluid recorded in the pericardial sac.

My experience both as a teacher and an examiner has shown me that the student looks upon rheumatic pericarditis as a disease in itself, running through three definite stages: (1) the stage of early inflammation; (2) of pericardial exudation; (3) of resolution.

In the general study of pericarditis such a conception is undoubtedly useful as a finger-post to guide us through the first difficulties of the subject, but it is not a correct or even satisfactory description of the rheumatic form in childhood. It brings the element of effusion into too great prominence, both as an incident in the illness and as a factor in the production of grave symptoms, and places too much emphasis upon mechanical embarrassment of the heart, which in reality takes but little part in rheumatic pericarditis at this age. There seems by this view to be an idea that some mysterious stage of effusion must appear and disappear with the regularity almost of clockwork. But the pathological changes are much more complicated.

We know from experiment that rheumatic inflammation commences *within* the pericardial tissues and not upon the

surfaces. In severe cases the foci are innumerable; in mild cases they are fewer and may not even damage the surface endothelium. The exudations vary, too, in character with the virulence and stage of the process. The worst cases show haemorrhagic exudations, but more usually they are fibrinoplastic or serofibrinous and seldom very copious. If the process is obstinate and subacute, the changes may be chiefly in the pericardial tissues, where nodular formations may occur and great thickening of the parietal layer follow. The amount of exudation in such a case will be small, if any, and the two diseased layers will become welded together by scar formation between the opposed surfaces. This condition is comparable to that of mitral stenosis.

The morbid process, commencing as it does in local foci, may severely implicate one part only of the pericardium—for example, the posterior—and even when it is termed general there are often left comparatively untouched areas in which subsequently new lesions may arise causing pericardial friction, although at the necropsy the pericardium may appear to have been universally adherent.

In rare cases, again, a large effusion may give rise to special symptoms.

It is evident, then, that our conception of rheumatic pericarditis must be built up on a clinical study of individual cases, and we cannot assume a definite and regular sequence of events.

The practical application of these pathological changes in rheumatic pericarditis to clinical medicine is of great value. In this condition there is often great and sometimes extreme enlargement of the area of precordial dullness; and if we have trained our minds to a rigid adhesion to the three stages of pericarditis we naturally regard this increased area as the result, and further the measure, of effusion. Then naturally we shall regard the feebleness of the heart as the mechanical result of the effusion and be tempted to act upon this reasoning. What, however, is the real truth? It is this: In the vast majority of cases the increased area is the result of acute dilatation (added to, doubtless, in some degree by effusion), the dilatation itself being the result of a carditis. If we rashly thrust a trocar into the area of increased dullness we should probably pierce the heart, as has been done on more than one occasion.

I am convinced that it is a very valuable aid to the physician (for it is no light undertaking to venture upon operative measures in pericarditis) if he realizes that however large the area of cardiac dullness in the rheumatic pericarditis of childhood it is exceptional for this to be the result of a large effusion.

There is another point which, while of lesser importance, must not be lost sight of. Pericarditis is rightly looked upon as a serious lesion, but we must beware of assuming that because pericarditis is *not* present the heart is not seriously damaged. Apart from the great difficulty in detecting some cases of pericarditis there may be occasions upon which it does not occur and yet the heart affection be very severe. These are examples of myocarditis which show the same dilatation and excited action as do the pericardial infections but they lack the clinical sign of friction. Such a heart may be far more seriously injured than one in which there has been general pericardial friction. I have seen, as have others, several cases of general pericarditis in strong children run a rapid and most benign course, and later have failed to detect any fault but a slight mitral leak. This exemplifies a cardinal rule in the study of infective heart disease—that we must be guided by the general results of the injury to the heart and to the patient, and not entirely by clinical terms such as pericarditis or a clinical sign such as pericardial friction.

These three points bear recapitulation:

1. The varying types of pericarditis in rheumatic children.
2. The rarity of large effusions.
3. The dependence of the symptoms upon a concomitant carditis.

Pericarditis, in addition to the evidence it affords of severe infection, brings certain dangers of its own. Pain may be a prominent feature, increased no doubt in many cases by its association with pleurisy, and the supporting power of the pericardium is seriously injured when its tissues are severely inflamed. Doubtless the movements of the heart are embarrassed when the two surfaces of the pericardium are much roughened, and, though in childhood much effusion is rare, exceptions occur introducing these added difficulties. Very serious results will follow when the inflammatory process has spread through the outer surface of the parietal pericardium and invaded the mediastina, joining here with other inflammatory areas in the pleurae, for when healing occurs the matted tissues around the pericardium become welded to it and in turn to the heart by the internal pericardial adhesions. These complications are occurring at a time when the heart is dilated and the neuro-muscular tissues weakened by the disease. It is these particular results of pericarditis which make it necessary to consider the lesion apart from endocarditis and myocarditis, provided we also remember that these are usually present at the same time and add to the complication.

The chief clinical forms of pericarditis in childhood are:

1. Acute internal pericarditis with some effusion.
2. Acute pericarditis, internal and external, with mediastinitis and pleurisy.
3. Malignant pericarditis.
4. Relapsing cases.

These distinctions are to some extent artificial, but they are of value at the bedside because they illustrate the various courses that this lesion may take.

### Acute Pericarditis.

Every textbook deals fully with the signs and symptoms of this lesion. As a rule the temperature is considerably raised, and there is a general illness with precordial pain, rapidity and feebleness of the pulse, and considerable dilatation.

Delirium appears to me to be very exceptional in childhood, and in some of the few cases I have met with chorea has seemed to me a factor in the mental state.

We rely greatly on pericardial friction for clinching the diagnosis, although we may be practically convinced by the general symptoms and trend of the case, even when friction has not been detected. Yet there are not in all cases of rheumatic pericarditis in childhood great distress and illness. On the contrary, there may be neither, and the physician may well be surprised when in a case of chorea with no apparent distress he discovers on examination of the heart very obvious pericardial friction. In fact, we can never safely forget in the rheumatism of childhood that the heart invariably requires careful physical examination.

Pericardial friction is a very constant sign in rheumatic pericarditis, but I have not expressed this frequency in statistics because it is difficult to obtain accurate figures and they are open to considerable error. In general terms it may be stated that its occurrence is the rule and that the exceptions are either cases of active myocarditis or examples of pericarditis over a localized area on the posterior aspect, and in both instances the problems in treatment are closely akin.

When effusion occurs the cardiac sounds, as a rule, become less audible, and often the friction disappears or diminishes, but this is not constant, and it is well known that a loud pericardial rub may be heard even when there is a large effusion. More frequently the disappearance of the friction is followed shortly by its reappearance. The sound is then harsher and more grating, and is coincident with a general improvement in the child's condition. Clearly now the process of resolution is in progress, the two surfaces of the pericardium have approximated, and the exudation upon their surfaces has become more viscid.

The sequelae of pericarditis are beyond the scope of this article, but we have to remember that in the convalescence from acute pericarditis, provided there is no gross external adhesion, our attention must be shifted from the pericardium to the damaged myocardium.

Endocarditis is almost invariable, though occasionally we find no evidence of its occurrence. This, however, is so unusual as to suggest that the pericarditis may be the result of some other infection—for example, the tubercular rather than the rheumatic—although I have convinced myself that this event may occur also in the rheumatic form. It does not follow that because endocarditis is present we may at first be able to detect it, for the louder pericardial friction may entirely hide the softer valvular bruit.

The course of an attack of acute pericarditis varies not only in virulence but with the resistance offered by the patient. There are exceptional cases in which the friction disappears in less than a week and the temperature reaching normal remains at this level. The dilatation rapidly subsides and the recovery may reach in three weeks the period of steady convalescence. Eventually recovery may be complete and even the mitral valve may have escaped involvement.

Far more frequently the active period is at least three weeks, during which time the friction may appear, disappear, and again become audible. There are pain and breathlessness with orthopnoea, a rapid pulse and irregular fever.

A close watch must be kept for increasing dilatation, progressive pallor, and increased frequency of the pulse-rate. Vomiting and restlessness are alarming symptoms warning us that the circulation is much enfeebled; a view confirmed by the appearance of slight enlargement of the liver, a scanty sometimes albuminous urine, and some oedema of the lungs. The physical signs over the chest posteriorly are often important. When there is great dilatation or an unusual degree of exudation, pressure upon the left lung and its bronchus will produce a condition of collapse of the lower lobe which may be mistaken for pneumonia or effusion. The note is impaired at the base behind and the breath sounds are intensely tubular at the level of the lower border of the scapula. No crepitations need, however, be detected, and as the condition subsides the breath sounds become at first harsh and finally, in favourable cases, again normal.

It will greatly assist in the realization of this result on the left lung if an opportunity is obtained of seeing a necropsy upon a case of severe pericarditis with great cardiac dilatation. In such hardly any part of the lower lobe of the lung will be visible from the front, for it has been crowded back by pressure into the left axilla, and the condition of collapse will be very evident and the pathological signs produced easily understood.

I have only met with one case in childhood in which there has been an extreme effusion, producing embarrassment of the heart by its bulk and death by syncope. This was the case (No. 3) alluded to under acute carditis, and although operative measures, as the event proved, would have been of no avail, there was no escape from the fact that my interpretation of this case was a mistaken one. In this instance there was fullness of the intercostal spaces on the left side over the precordial area, which should have led to a correct interpretation when coupled with muffling of the cardiac sounds and the extreme distress.

A very remarkable coincidence followed this case in the admission of another child with severe pericarditis, muffling of the sounds, and an extreme area of cardiac dullness mounting as high as the second space on the right side. I was so unsteadied by my previous experience that I seriously considered surgical interference, but was checked by the very grave condition of the patient. The necropsy showed here that there was no fluid in the pericardium but a very much thickened parietal pericardium with recent adhesion to an enormously dilated heart. I record this case here as a warning of the care that is needed before deciding upon paracentesis of the pericardium, and of the extreme value of the guiding rule not to hasten to assume the presence of a large effusion.

### Acute Pericarditis, Internal and External, with Mediastinitis and Pleurisy.

This group is a dangerous one, for it contains the cases in which the sequelae due to adhesions are the most serious. Here the pain and distress are greater, owing to the concomitant pleurisy. Pleuro-pericardial friction will be heard along the right and left margins of the cardiac dullness, and crepitations may be audible immediately under the stethoscope in the anterior mediastinum. In some cases the inflammation of the serous membrane is more extensive, and the surfaces of the liver and spleen are involved, and we hear the comparatively rare sign of peritoneal friction.

The course is a long one, extending, should the child survive the initial attack, over many weeks. The heart is greatly dilated, and remains so in spite of the greatest care in treatment. Later hypertrophy may develop, and then there may slowly supervene the signs of an adherent pericardium or of multiple serositis. To avoid any confusion by use of the term external pericarditis, I mean by it inflammation of the outer surface of the parietal pericardium.

### Malignant Pericarditis.

This may give rise to some puzzling signs owing to the thickening of the parietal layer of the pericardium. In some cases at the necropsy this layer may be found a quarter of an inch in thickness, and will be loosely adherent to the visceral pericardium by recent adhesions.

The course is protracted, but when from the first the disease implicates the entire pericardium it runs a disastrous course, which is best exemplified by the following instance:

A boy aged 7 years had a severe attack of carditis in the preceding year, and three weeks before his admission to hospital had suffered from multiple arthritis and precordial pain. His final illness lasted 8½ months. During this time there were repeated nodules, and there was irregular fever reaching to 104° F. From time to time pericardial friction appeared, and faded away only to reappear. He gradually became more anaemic and weaker, and died of cardiac asystole. The necropsy showed great thickening of the pericardium and some recent adhesions; no fluid was present in the sac.

I have termed this a malignant rheumatic pericarditis because it suggests to me a process in the pericardium closely akin to that met with in the endocardium in malignant endocarditis. There is great local change from the micrococcal infection with the formation of nodular masses containing necrotic areas surrounded by greatly swollen and damaged connective tissue. There is also considerable persistent pyrexia. We must not, however, expect to meet with the widespread dissemination of foci of infection that occur in malignant endocarditis, for the pericardium does not bear the same relation to the general circulation as does the injured valve. Numerous infarctions, aneurysms, and such like phenomena will not occur, but the likeness lies in the obstinacy of the infection, the fever, and the severe general symptoms.

### Relapsing Cases.

In the relapsing form we see the link between the preceding and the more usual acute pericarditis. The symptoms may never be severe, but the process advances by a series of local areas of infection, and pericardial friction may be audible at intervals for many weeks. When the rub disappears there is some degree of general improvement, when it reappears there is an exacerbation of the symptoms. The pulse remains rapid and the heart is excited and dilated. Considerable thickening of the pericardium may result, and the heart itself is much damaged by chronic inflammation.

This course is likely to supervene in fragile, weakly patients who have little power of thoroughly destroying infection, and the outlook is gloomy although it may be difficult to realize the gradual sapping of the cardiac power while the child is in bed carefully nursed and guarded.

The thickening of the parietal pericardium, which occurs with the deposit of thick exudation upon the opposed surfaces coupled with the cardiac dilatation, may readily deceive those who are not acquainted with this form of pericarditis. The cardiac sounds are muffled and the area of precordial dullness is greatly enlarged, and may precisely resemble the outline that is met with when there is a large exudation. Further, the interpretation of an $x$-ray examination needs caution. The report may support the view of a large effusion based upon the outline of the shadow, and yet, as I have confirmed, the necropsy has proved the contrary to be the case.

If we can clearly discern the outline of the heart separated by a lighter area from the outline of the pericardium this interpretation of effusion is justified, but in these particular cases no such distinction between the two outlines will be found. An attempt in such a case to drain the pericardium can only lead to failure and possibly to disaster.

In these instances, in which the pericardium is so much swollen and injured by disease, there is a serious danger of the incomplete healing of the foci, and, with the persistence of lurking infection, of the development of the malignant form of pericarditis.

NOTE.—A kindly critic has directed my attention to two badly expressed sentences in my first article. On p. 250, col. 1, lines 33 and 34, for "small follicular deposits" read "small deposits between the follicle"; line 49, "for internal ear" read "middle ear."

# OBSERVATIONS ON SHELL SHOCK AND NEURASTHENIA IN THE HOSPITALS IN THE WESTERN COMMAND.

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SINCE December, 1916, I have been actively engaged, *inter alia*, as inspector of shell shock and neurasthenic patients in the general, sectional, auxiliary, military, Red Cross, and V.A.D. hospitals of the Western Command. The extent of this command may be judged from the fact that it reaches from Gretna Green to Milford Haven, and embraces the Isle of Man, Cumberland, Westmorland, Lancashire, Cheshire, Shropshire, Herefordshire, Monmouthshire, and all Wales. Having examined and taken notes of more than 800 cases of shell shock and neurasthenia in these hospitals, it has occurred to me that my observations thereon might be of interest and of some slight value in the treatment of these diseases.

The symptoms of shell shock have been fully analysed and described by many neurologists, and the painful picture of the acute sufferer drawn by able hands; but while great stress has been laid upon the disorders of the cerebro-spinal system, hardly enough attention seems to have been given to the altered functions of the sympathetic ganglia and nerves. I have been impressed by the large number of these patients with hysterical or pithiatic symptoms. When brought before me several—mostly young men between 19 and 25 years of age—have exhibited intense suffusion of the face, free perspiration, widely dilated pupils, rapid heart's action with weak pulse and cold clammy extremities, terminating in a hystero-epileptic seizure with marked clonic spasms of comparatively short duration. The fine tremors have continued after the clonic spasms have passed off. I have met with several cases of hyperthyroidism with slight enlargement of the thyroid gland, one of which exhibited nearly all the symptoms of Graves's disease—palpitation, enlargement of thyroid, shortness of breath, anaemia, and protrusion of eyeballs. In one or two cases I have suspected hyperadrenalism from excessive functional activity of the suprarenal bodies under emotion. In these there has been slight cardiac hypertrophy, with rapid pulse and hysterical symptoms.

It is unnecessary for me to describe the coarse and fine tremors of shell shock patients. They may affect the arms and hands, legs, neck, and body generally, but I have seldom observed fine tremor of the tongue in a purely functional case. If this symptom exists it is generally found in the man who has reached or passed maturity and who has been addicted to the abuse of alcohol or excessive smoking. In testing patients for fine tremors I make them face me and extend the arms, one at a time, at right angles to the body and square with it, with the hands vertical and the fingers spread open, the head being turned to the opposite shoulder. Fine tremors are always more marked in the hand which is most used. The coarse tremors are often simulated by the malingerer or skrimshanker; the fine they cannot affect.

I examined a man recently who was called up as a recruit in January last, and who three weeks later, after inoculation, exhibited continuous coarse tremors of the upper extremities until three weeks ago. He had never been exposed to shell shock, or shock of any kind. It appeared to be solely a case of "funk" at "having to do his bit." He had no fine tremors of the hands or exaggerated reflexes. I recommended daily faradism, varied by galvanism if necessary, to the upper extremities. He has steadily improved, and a week ago absented himself from the hospital without leave, to be brought back a day later.

I have seen quite a number with all the tremors of shell shock who have never been near the fighting line, and many who have never been out of the country. Their symptoms have arisen from fright, worry, and nerve tension self-induced. Several of these men were old alcoholics of about 40 years of age who had been called up.

The symptoms of shell shock in wounded soldiers are often latent for a period after the wound is sustained. Hence the man arrives at the base labelled wounded only, and as such is sent to the general hospital on this side. Owing to the pressure on the home general hospitals after a "push" many patients are quickly passed on to the sectional and auxiliary hospitals, and it is in these the shell shock symptoms are first manifest. The wound heals, but the shell shock symptoms remain. To ensure that such cases are properly treated we early last year gave instructions in the Western Command that these men should be removed as speedily as possible to the special neurasthenic hospital at Maghull. This has necessitated a considerable extension of that hospital, and the equipment of a second neurasthenic hospital in the southern portion of the command is to be undertaken at an early date.

The cases of hysterical or pithiatic paralysis, the hemiplegias, paraplegias, monoplegias, contractures, and men with halting gait and limps have been sent to the special neurasthenic hospital, Maghull, or to the special sectional nerve hospitals for treatment. I have not noted any tics, and I think they are comparatively rare in shell shock cases. The cephalalgias are mostly frontal and intertemporal, occasionally occipital in the hystero-epileptic cases, never vertical. The pain is worse in the morning and increased by excitement or brain fag. Pains in the lower limbs are more usual than in the upper, and pains in the viscera and spine are not uncommon. A few of my cases have been deaf-mute or mute, a good number have spoken only in whispers, and many stammered or had blurred and hesitating speech. I have not had any patients blind through shock, although some had lost their sight but regained it before they came under my notice. A number suffered from periodic vomiting, and two or three had glycosuria.

The mental symptoms noted have occurred in the following order of frequency: Confusional, melancholic, delusional, stuporose, and maniacal. I have been struck by the relatively few cases of mania to melancholia which have occurred in this war. General paralysis of the insane also has been rarer than I expected. In many patients the memory is impaired for recent events and day to day actions and happenings, and there is a blank in regard to the incidents of their shell shock period. Memory for recent events of daily life, however, improves as the case progresses to recovery. I would here allude to the possibility of "altered character" resulting from shell shock. The moral tone of the individual may be changed for the worse, and this change of character may be out of all proportion to the severity of the original shell shock. With it there may be altered feelings, affections, temper, and habits generally. From the medico-legal standpoint this morbid mental state is very important in regard to responsibility, and must be duly recognized. I have seen such cases during the past twelve months, and no doubt there have been many of them.

## TREATMENT.

It is now fully recognized that the various shell shock neuroses are very curable in the early stages, but much more difficult to deal with if allowed to drift, and, moreover, they can only be successfully treated by specially skilled neurologists, who have the entire confidence of the patients. Many letters have appeared in the general and medical press recently condemning the congregating of shell-shock patients and their association for treatment under a common roof. Such statements are misleading and wrong, for if these patients are associated for skilled treatment in a special hospital they are greatly assisted to recovery by contact with those patients whom they see are improving daily, and who will encourage them to persevere in the treatment so as to regain their self-control and self-confidence. That it is bad to congregate shell shock patients with others who are suffering similarly and are not improving through want of special treatment, I readily admit; and the non-improvement of the cases in sectional, auxiliary, and voluntary aid detachment hospitals under excess of sympathy, encouragement of auto-suggestion, and want of special treatment, has, I fear, been the cause of the statements alluded to.

In the early days of the war the treatment of shell shock—the outcome of the terrible explosives now used and the continued mental and physical strain of trench warfare—was not understood, and by some many of the symptoms were attributed to fear. This was soon corrected when it was found that many of the indubitably bravest men fell victims to it. Then came a complete

revulsion of feeling. The terrible picture presented by the acute sufferer appealed most forcibly to the finer sentiments of all, and an excess of sympathy and indulgence followed quickly. The patients were nursed with the tenderest care, surrounded with luxury, and considered in every way. Nerve tonics and sedatives were freely given, and when the milder cases improved somewhat, these patients were sent on sick leave to their friends, who said: "He is very low spirited; we must have a few people in and a merry evening to cheer him up. He wants a little stimulant, whisky or wine. We will take him for a motor ride. He shall go and stay with So-and-So at X (a large town, low-lying and relaxing), and be taken to the theatres and cinemas." All bad for the patient! So he did not improve, and a relapse frequently followed.

Now the treatment which has been found most efficacious is very different. The patients with acute symptoms are kept in bed, but made to get out and walk a few steps every day, when able, and are transferred to the Neurasthenic Hospital for special treatment as soon as possible. In the meantime, if sleepless, they are given medinal, trional, or bromide and chloral at night. Absolute quiet and fresh air (verandah life if weather permits) are essential, and no stimulants can be allowed. These acute cases are mostly treated at the base, at Netley, and in the special nerve hospitals of the command. I have seen patients, however, who have been kept in bed for weeks and weeks, petted and favoured in every way, who made no effort to help themselves, and consequently made no progress whatever. These were speedily moved to other surroundings, for treatment elsewhere.

The milder cases with tremors and those with hysterical or pithiatic, and mild hystero-epileptic symptoms improve under bromide and valerian, nux vomica, arsenic, and other nerve tonics, but environment and habits of life play an even more important part than drugs. Convinced of this I drew up last November the following "rules of health" for these patients, to be specially applicable to those in the sectional, auxiliary, V.A.D. and Red Cross hospitals, and to convalescents on sick leave. These were approved by the Deputy Director of Medical Services and issued.

*Rules of Health to be Observed by Shell Shock and Neurasthenic Patients.*

1. Live as much as possible in the open air by day and night. Always have a window open at night.
2. Exercise both of body and mind is essential, but it must be carefully regulated and never taken to exhaustion. When the legs tire, sit down. When the head swims or aches and you cannot collect your thoughts, put the book down.
3. Avoid crowded rooms, cinemas, and theatres. Excitement and close rooms are harmful.
4. Avoid all alcoholic stimulants; they are most injurious in shell shock cases, as also is the excessive indulgence in tobacco, especially in the form of the cigarette.
5. Keep early hours. To bed before 10 p.m.
6. Let the meals be regular and the dietary simple, liberal, and highly nutritious. Rest for an hour to an hour and a half after the midday meal.
7. Avoid cold baths until you can get the afterglow. Prolonged hot baths are enervating. Tepid are best.
8. Electricity and massage are of no use, except for wasted muscles or stiffness of joints.*
9. Exercise self-control to re-establish self-confidence by re-education, recognizing all the time that your condition is one which should result in complete recovery.
10. When on leave and your movements are under your own control: (*a*) Be in the country rather than in a town. (*b*) Avoid all worry, noise, and excitement, all raided areas, proximity to training camps, and the jar of explosives and gunfire. (*c*) Never travel by train, motor car, or tram if you can avoid it. (*d*) Stay at a high altitude where the air is bracing in preference to a low level, where it is generally relaxing. This does not apply to bracing seaside resorts.

Carefully controlled employment of mind and body is most necessary to expedite recovery and divert the patient's thoughts. He must be out of doors whenever the weather permits, engaged in gardening, wood-cutting, and outdoor sports and games, and, when indoors, in workshops, and in taking part in the various amusements of home life. Clear, bracing air is very important. A number of our neurasthenic officers who were not doing at all well in a palatial low-lying residence were moved to a castle at a higher altitude a few miles away, and they improved at once. Patients moved from large towns to bracing seaside resorts have made similar progress.

For the severe neuralgic headaches we give aspirin and phenacetin, and, to those who have been in Mesopotamia and Salonica, quinine. The man who stammers needs re-education. I tell him to read aloud to himself for half an hour, morning and afternoon; then to read to one or two of his fellow-patients, one of whom, if possible, should have had the same trouble and got the better of it. Treatment of functional paralyses and hysterical symptoms by hypnosis and psychotherapy has given excellent results with a high percentage of permanent cures. Psychotherapy is the chief method of treatment adopted at the Neurasthenic Hospital, Maghull. It embraces suggestion, persuasion, therapeutic conversations, re-education, and exercise of the functionally paralysed limbs. The physician, as it were, masters the patient, gains his entire confidence, analyses his troubles and morbid ideas, and sets his mind at rest.

A Special Neurasthenic Invaliding Board under the Ministry of Pensions deals with shell-shock cases, and most difficult are these patients to adjudicate upon, for many will recover completely when they are once out of the army, and have lost all fear of ever again being in the fighting line. It is doubtful whether any of the many I have examined in this command will be fit for active service in the fighting line during this campaign, but I believe nearly all will ultimately recover, and many of them are brave fellows (there are V.C.s among them) who have given of their best in the service of their country.

* This rule requires qualification. It means electricity and massage in unskilled hands, and not in those of the skilled physician, to whom electricity is most useful in demonstrating to the patient that his muscles will act if he has confidence and will make the effort.

## WAR PSYCHOSES OCCURRING IN CASES WITH A DEFINITE HISTORY OF SHELL SHOCK.

BY

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THE opinions here expressed have been formed from the examination of over 4,000 cases of soldiers admitted to the Mental Division of the Lord Derby War Hospital from the Expeditionary Forces. The symptoms have been all quoted from personal records and observations on cases where the history showed definite proof of actual close proximity to shell explosion.

The following were by far the commonest: Amnesia, melancholia, mental confusion, delusions, and hallucinatory disturbances. The condition of stupor was also met with, but was not so common as the aforementioned, and in some instances the sequence of events showed that cases which had been admitted to hospital originally as definite cases of "shell shock" have subsequently passed into a neurasthenic condition, which again has not improved, but drifted into states closely resembling dementia praecox. Retardation of thought was a pronounced symptom in the majority of cases; mutism and deafness were also met with. Associated with the above symptoms were headache, insomnia, terrifying dreams, general nervousness, and varying strange sensations in the head. As regards the physical signs, the deep reflexes were always very much increased, tremors were present almost universally in the tongue and outstretched hands, and the pupils were generally dilated. Frequently patients complained of throbbing sensations in the precordia, clamminess of the skin, and appeared before one as highly strung and emotional.

### *Amnesia.*

This, in my experience, is by far the most common symptom; the cases that have come under my review have covered periods of very varying duration. I will give a few of the very many instances:

#### CASE I.

Pte. L., admitted with the history that after leaving the trenches he had absented himself from his unit, and when found could not state where he had been or what he had done with his belt or bayonet. He appeared generally strange, and on this account was evacuated to England as a mental case. The period of absence in this case seems to have been only a few hours, but on recovery from his accompanying mental symptoms in this hospital he sternly denied that he had any recollection of what happened or where he had been during

this time, and excused himself on the grounds that he had been recently subjected to a very heavy bombardment and felt "done up" when he left the trenches owing to loss of sleep.

CASE II.

Gnr. P. was serving the gun when he was knocked over by the recoil. Shells were bursting around him and he was carried to the dressing station. He remembers nothing till he found himself on a hospital ship coming to England. Documents accompanying the case showed that upon August 18th, 1916, he was found wandering away from his unit, and as he did not reach England until August 21st, it is certain that his period of amnesia must have lasted over two days at any rate, and perhaps longer. He could recall nothing from the time he went to the dressing station till he was on the boat.

CASE III.

Pte. H. was admitted to a casualty clearing station on September 17th, 1916, with a report that he had been buried by a shell. He could give no information about himself in the various hospitals he had passed through, and was eventually admitted to the Lord Derby War Hospital on October 4th as unimproved. Upon recovery, which was gradual and indefinite, he stated that he recollected something happening in the shape of a shock to his head when in the trenches, but nothing more. He did not remember going into hospital, and until October 12th did not seem to be able to remember anything.

Many other instances could be quoted, but it is thought that the above typical instances will suffice.

*Melancholia.*

All grades of this condition were met with and were often associated with active suicidal promptings. I quote the following as examples:

CASE IV.

Pte. D. was admitted to hospital in France in July, 1916, as a case of shell shock, for which he was sent down to the base; after being a week there he was returned up the line again as an officer's servant. After having been again under bombardment in the trenches he became strange in his manner, and the officer to whom he was servant noticed that he was very depressed. He was again admitted to hospital on this account on August 19th of the same year, and eventually transferred to the Lord Derby War Hospital, where his most prominent symptoms on admission were those of melancholia and complaints of great pains in the head.

CASE V.

Gnr. C. had been three months under considerable trench and shell experience when he noticed that he was unable to sleep at night and felt "queer." He carried on for another four weeks, when he mentioned it to his corporal, but asked him to say nothing to the doctor. Two months later he was reported sick owing to the fact that he was quite unable to do his duty and had refused anything to eat or drink for several days, and would not answer questions. He was admitted to hospital, where he was found to have several sticks of cordite in his pocket. He was evacuated down the line, where he is described as being in a depressed mental condition, seldom saying anything more than "Yes" or "No," and eventually admitted to the Lord Derby War Hospital in much the same condition, presenting all the features of melancholia.

CASE VI.

Pte. F., on July 1st, 1916, when in a dug-out, was hit on the head by shrapnel splinters. He was admitted to hospital, apparently with superficial wounds, and remained there ten days. He was then discharged to convalescent camp; whilst there, he felt his head bad, and was eventually found walking about with an open razor in his hand in a dull, depressed condition. He was evacuated to England, and admitted in the middle of September to the Lord Derby War Hospital, showing still a good deal of depression, and answering all questions in a melancholic voice. He said he felt worried about what he had seen in the trenches, and this kept him awake at night. He was in a typical melancholic condition.

*Confusional States.*

The symptoms under this heading varied from general muddled feelings in the head to a complete disorientation of time and place, and attacks of complete amnesia.

CASE VII.

Pte. R. was knocked out by shell explosion at Albert on July 12th, 1916, and appears to have been buried also. He was evacuated to the base, and was admitted to the Lord Derby War Hospital early in August, when he presented a dull, heavy, far-away look, with general confusion of thought, and difficulty in concentrating his attention. He stopped in the middle of replies to questions, as if muddled and unable to express what he wanted to say. He complained of a dizziness in the head, as well as severe occipital and vertex headache, and also of buzzing in the ears. He often repeated the last word in reply to questions—for example, asked when he went to France for the second time, he said, "May, 1916, 16, 16, 16." His mentation generally was slow, and there was considerable difficulty in obtaining from him any history of his experiences. He said, in fact, that he "could not think," but that he had been all right until the shell came.

CASE VIII.

Pte. M. was buried by shell about the middle of August, 1916; he tried to carry on, but was noticed acting strangely. He was brought before his R.M.O. on this account on September 5th and evacuated to the base. He was eventually admitted to the Lord Derby War Hospital in the middle of September in a very confused condition, completely disorientated in time and place, and apparently thinking that he was still in France. Otherwise, in answering most questions he was sensible, and could give a good account of his experiences prior to being buried. His memory for recent events, however, was very defective.

CASE IX.

Spr. J. He describes two shells dropping about the end of June, 1916, one on each side of him, in a front line trench. He said he had the sensation as if his head were off, and he felt very much shocked but did not lose consciousness. He returned to his billet, and the next morning complained of pains in his head and a shivering feeling all over him. On this account he was evacuated to the base. He was admitted to the Lord Derby War Hospital on August 25th complaining of severe pain in his head, especially at night, which prevented him from sleeping, that he had a muddled feeling in his head, and could not concentrate his mind on anything. There was some degree of melancholia also, but the prevailing symptoms were those of confusion and inability to give any details of his illness, associated with extreme nervousness, amounting even to fear when spoken to.

*Delusional States.*

All forms of delusion were met with, some taking even the grandiose type, which, associated with the tremors and markedly increased deep reflexes, led to the erroneous diagnosis of general paralysis in a few instances. The commonest delusions met with, however, were of the persecutory type. The three following examples will suffice:

CASE X.

Pte. D., at the end of April, 1916, after having been ten months on and off in the trenches and subjected to heavy bombardments, complained of pains in his head and noises in his ears. During the night he began roaming about, and was sent sick to a field ambulance. He was described as being, when there, in a dazed condition; he was thought to be suffering from severe nervous exhaustion, and was passed down the line. He was eventually evacuated to England and admitted to the Lord Derby War Hospital, where it was elicited that, in addition to other symptoms, he had the idea that the hospital was mined, was apprehensive that some commotion was going on outside the building, and stated that he often heard the sound of rifles going off.

CASE XI.

Another man thought the men of his regiment were plotting against him and were trying to get him into trouble, that they sneered at him and made insulting signs at him, that they talked outside his billet and called him filthy names.

CASE XII.

A third man seemed to think that he had done something wrong and that other people thought that he had committed some crime for which he was going to be shot.

Instances in which the patient had the idea that he was being looked upon as a German spy were so common that they deserve mentioning on this ground alone.

*Hallucinatory States.*

Both aural and visual hallucinations were met with, but the former were more common. The following are cited as examples in which the hallucinations were the predominant feature.

CASE XIII.

Pte. D., after service in the Dardanelles, where he contracted dysentery and was invalided back to England, rejoined his regiment and was sent to France. There he was subjected to very heavy bombardment in the trenches, and said that he absolutely could not stand it and had to put his fingers in his ears—it so frightened him. He was sent from his regiment to a field ambulance towards the end of April, 1916, complaining of pains in the head and noises in the ears, and on examination was found to be in a very lost mental condition. He was evacuated to the base and subsequently transferred to England and admitted to the Lord Derby War Hospital, where he was found to have passed through an attack of complete amnesia. He described a heavy bombardment going on and that the next thing he was aware of was finding himself in hospital. He was very depressed and acutely hallucinated, saying that he heard "the voice of God" reprimanding him for his past misdeeds. This condition remain fixed, and he subsequently developed the delusions that his bed was affected by electricity and that he was the subject of magnetism. This condition still persisted after eighteen months' residence.

CASE XIV.

Another man who was found wandering from his unit after heavy bombardment was admitted to hospital in a dull, listless, and apathetic condition. On admission to the Lord Derby War Hospital he stated that he had distinctly seen a vision of his mother whilst he had been in bed at night. There was also a period of complete amnesia in this case from the time he was found wandering till shortly before his admission to this hospital, covering a period of about twelve days.

Many of the symptoms above quoted were, of course, associated in the same case, and the following *précis* of the history and progress of such cases will now help further as illustrations:

CASE XV.

Pte. H., aged 23, gave no history of any nervous or mental trouble in his family. He left school, aged 13, Standard VI, and assisted his father, a furniture dealer, in which work he was occupied at the outbreak of war. He had had no illnesses of any importance up to the time of his enlistment in November, 1915. He went to France in April, 1916, and was in the Somme advance. He was admitted to hospital in France as a case of "shell shock" in August, 1916. He complained of very severe headache, and was unable to give his number, name, or regiment. The day after his admission he was found wandering along the road about half a mile away from hospital in a confused condition. He was returned to the hospital and kept for a further period under observation, during which time some suspicion was aroused as to his being a malingerer. It was finally decided, however, that he was "weak-minded," and he was evacuated to England as a case of "dementia."

When admitted to the Lord Derby War Hospital in the first week of September, 1916, he complained of "feeling funny in his head," and that he could not sleep at night owing to the thoughts of his experiences in France. He was unable to give a clear account of how he reached hospital, but had some hazy recollection of being in a base hospital in France. The last thing he recollected clearly, however, was being with a machine-gun section in the trenches. No hallucinations could be elicited, and although he was somewhat slow in his reply to questions he showed no signs of being a mental defective. Physical examination revealed no wounds or signs of injury and no stigmata of degeneration. No marked neurological signs were present. The case progressed satisfactorily under treatment; he regained his full memory for both recent and remote events, and on November 21st, 1916, was sufficiently well to justify his being discharged from hospital to duty for home service.

CASE XVI.

Gnr. G., aged 22. No nervous or mental trouble could be traced in the family. He left school, aged 13, Standard ex-VII, and started work as a cabinet maker, which trade he worked at up to the time of his enlistment. He had had no previous illnesses and was a teetotaler. He joined the army in July, 1915, and went to France the following month. On August 9th, 1916, about 2 p.m., he asked a lance-corporal of the Military Foot Police if he could assist him in getting to England; as he appeared strange in his manner he was detained by the police and taken to hospital. Here he is described as "an idiot," and could not account for how he got there. He said that "Flo came to him yesterday and told him to go home." He was eventually evacuated to the base and transferred to England.

When admitted to the Lord Derby War Hospital, early in September, 1916, he appeared quite rational, but stated that he did not know what had happened to him, and thought he had had shell shock, but that he now felt quite fit except for occasional feelings of nervousness. He remembered going to sleep in a cellar near the firing line when some shelling was going on in the neighbourhood, but could recall nothing more till he "woke up" and found himself coming over to England. Before this he had on one or two occasions felt as if a rifle had gone off between his two ears, which had startled him very much and made him very dizzy. He had had no leave since he had been in France, and had felt considerably exhausted. Intellectually he was well up to the average standard, and his memory, apart from the above described period of amnesia, was quite good, and his power of retention unaffected. Physically he presented fine tremors of his outstretched hands, but no other marked neurological signs. He progressed satisfactorily, and on October 3rd, 1916, was considered fit to be discharged to duty for home service.

CASE XVII.

Cpl. B., aged 23, gave no family history of any nervous or mental trouble. Was up to the average standard at school, and employed helping his father as a confectioner up to the time of his enlistment. He went to France about July, 1916; in August he was blown up by shell and evacuated to England and admitted to the medical division of the Lord Derby War Hospital as a case of "shell shock." He was discharged to duty in May, 1917. On his arrival at his unit he appears to have been considered unfit for duty and immediately sent to hospital again. While under treatment there he appears to have been subject to attacks of excitement, during which he was described as a danger to bystanders, and it was on this account that he was sent back to the Lord Derby War Hospital on September 17th, 1917, and admitted to the mental division.

He was a somewhat pale, apprehensive-looking youth, who replied to all questions in a whisper. He stated that he had been dumb for several months, and that his voice had returned of its own accord, though never more audible than it was then. He said he could not sleep owing to noises in his head, and he appeared to be in a very highly strung, nervous condition and easily upset. He admitted having attacks in which he had lost his self-control, and said that at times he seemed to have lost consciousness. At the time of examination no evidence could be obtained of visual or auditory hallucinations. He stated that during his attacks of excitement he seemed to visualize that he was out in the trenches fighting again. Physical examination revealed tremors in the upper extremity, increased deep reflexes and somewhat dilated pupils, which, however, were active to light and accommodation. On laryngeal examination no evidence of any paralysis could be found, and the aphonia was considered to be purely functional.

After three weeks' active treatment by suggestion his voice returned to normal for the first time for twelve months, and he said he slept better and felt improved in every way. The improvement was maintained, his tremors passed off, and on August 29th, 1917, he was discharged from hospital to his home to resume his former occupation.

CASE XVIII.

Pte. J. gave no history of any nervous or mental trouble in the family. He left school at the age of 15, well up to the average standard, and had since been employed in clerical work. He had also devoted a good deal of time to gymnastics, besides being an assistant scoutmaster two years and a half prior to enlistment. He joined the army in August, 1914, and went to France in 1915. Towards the end of June, 1916, up to which time he had been subjected to considerable shell and trench experience, he was reported as strange, and wandering about aimlessly, frequently speaking of spies, and wishing to search for them. It was on this account that he was admitted to hospital, where he is described as being in a continuous state of tremor, and to walk about like an old man. He asked to be allowed to make an expedition into the woods to find spies he knew to be hiding there. He was evacuated to the base, and transferred to England. When admitted to the Lord Derby Hospital about the middle of July, 1916, he was conscious, and aware of his position and surroundings, but stated that he could not recall leaving the trenches; that during the whole of his passage through the different hospitals he seems to have been in a confused condition, and not able to explain himself. He still felt that he had not the same control over himself as formerly, but said that he was feeling better and stronger. He had a difficulty in concentrating his attention, and when people were talking to him he often found that he had to ask them what they were saying; his mind was continually wandering to the sights he had seen in the trenches; on one or two occasions he had found himself crying, and did not know what he was crying for. The apex beat was heaving, and the heart sounds were very much accentuated. He complained of a throbbing sensation over the precordia. There were marked tremors in the tongue and upper extremity, and the deep reflexes were all increased; the pupils were dilated, though normal in reaction. The case progressed favourably, and on November 18th, 1916, he was well enough to be returned to duty for home service.

Many more cases could be quoted, but the above seem to be fairly characteristic examples. Before concluding I should like to emphasize the present-day importance of the differential diagnosis between all shell-shock cases and general paralysis of the insane. I have met with quite a number of cases in which the latter was diagnosed as shell shock, and vice versa, and have been particularly struck with the remarkable similarity of symptoms in many cases. In quite a number in which there was a definite history of being blown up by shell patients have presented confusional states with considerable loss of memory associated with tremors of tongue, facial muscles, tremors in the outstretched hands, increased deep reflexes, syllabic stumbling in the speech, and even delusions of grandeur. Careful examination of the pupil reactions, together with ophthalmoscopic examination of the fundi and Wassermann reaction of the blood and cerebro-spinal fluid, however, has corroborated or negatived the diagnosis.

I have seen a few remarkable cases in which shell shock and general paralysis were associated in the same patient.*

Hyperthyroidism is another condition which requires to be carefully excluded in the diagnosis of "shell shock."

In reviewing the family histories of cases it was found that the number in which there was definite admission of any nervous or mental trouble in the patient's family history was comparatively small. On going through the histories of fifteen cases, one showed that the patient's maternal cousin and maternal grandmother had been inmates of an asylum; another that his paternal uncle had

*Since recording these opinions a summary of Dr. Ramsay Hunt's observations whilst employed in the routine neurological examination of 1,500 men in an American officers' training camp has been published in the *Medical Review* of March, 1918, to which I must refer the reader.

been in an asylum; a third that his brother was a ne'er-do-well, and that his mother died of a "stroke"; and in a fourth case the patient's mother was a doubtful epileptic. In the remaining eleven cases the family was free from nervous or mental trouble. In dealing with the question, however, one has a feeling that these histories are by no means always reliable, and in dealing with men coming from all parts of the world it is impossible to corroborate them.

In conclusion, I should like to state my agreement with other writers on the subject that the predisposing causes of these conditions has no doubt been "fear." The fear of being afraid is now commonly recognized as a very important factor in the production of all functional conditions, but want of sleep, cold, wet, and the appalling sights at the front have all no doubt contributed their share to the climax which has been brought about by the shell explosion, when each individual reacts to emotions according to his personality.

## THE EARLY STAGE OF HYSTERIA.

BY

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R.A.M.C. (TEMP.).

For three years I have been interested in the diagnosis of functional nervous disorders, and I have observed certain facts which seem to me of fundamental importance.

Three classes come up for consideration:

A. The *malingerer*, who has determined to attain a definite end by the simulation of disease. This is not a large group and does not call for special attention here.

B. The man who goes sick with *feigned* or *exaggerated symptoms* without any more definite object in view than, say, to avoid a route march or an unpleasant fatigue. A patient of this class at the time when he reports sick may be suffering from that feeling of tiredness which at times comes to all of us, and which is called by the French soldier "*le cafard*." This word was rendered into English by an official interpreter as "the hump." "To swing the lead" is a well-known phrase, and, like all successful slang, expresses a *nuance* which no other set of words conveys. It is of nautical origin, and when used by a soldier signifies "to plumb the stream of consciousness of the medical officer." The man who "swings it" is not a pure malingerer and has not set out deliberately to carry a deception through to an end; he is only "trying it on," and if he fails he returns to duty with but a small grievance against his medical officer.

C. The *hysteric*, who differs from the members of Groups A and B in that he has a belief in the reality of his disability. In addition to this belief there may be other manifestations showing that the disability is associated with a change in the personality of the patient.

Between these three groups, members of which when typical are easily distinguished, intermediate and doubtful cases occur, and although in theory Groups B and C should be quite distinct, yet I have seen many cases in which I could not make the distinction.

Of cases falling within Group B numberless examples are admitted to hospital with the most varied diagnoses—"cerebro-spinal fever," "appendicitis," "peritonitis," "laryngitis," "tabes," "internal derangement of the knee," "pleurisy," "myalgia," "rheumatism," "gastritis," "D.A.H.," etc., have all within my knowledge been credited to patients who were suffering only from "*le cafard*," and the men have gone back to duty after a single interview, satisfied to be given the chance of escape from a false position without undue loss of self-respect.

The importance of Group C is realized by few. With the single exception described below, I have never watched the development of hysteria *ab initio*, nor apart from so-called "shell shock" can I find such a case described in the literature; nor have I met a medical man who has watched a case from the beginning. Neurologists, as such, never see one until it is fully developed. So far every case of hysteria I have seen in the army, again excluding examples of "shell shock," had been diagnosed and treated as organic disease. This, with the fact that I have seen from its origin only a single example of hysteria, though I have been watching for cases for three years, explains why we never find them described. The officer who is able to diagnose and describe such a case never allows it to progress.

In my wards a man recovering from a wound has always been encouraged to use his limbs as soon as possible, but many patients are seen in whom a hysterical paralysis or contracture has followed a more or less trivial injury.

The history of my one case is as follows: A soldier sustained a fall and was admitted to hospital with a bruise over the ilium. He complained of severe pains, increased by pressing apart the iliac spines. I suspected a fracture of the pelvis, put on a tight binder, and had the bones radiographed. Then he began to complain of pains down one leg, where I found alterations in sensibility and a loss of power which puzzled me considerably, I being for the time off my guard. Ten days later the foot on the affected side began to assume a varus position, which I recognized as hysterical. Energetic treatment removed all the manifestations. He returned to duty, and was seen by me some months later, when he was quite fit. Looking back upon this case, I have no doubt that if I had applied those tests for superficial hyperaesthesia which I have described in a previous article,[1] I should have found that the original pains were largely of mental (psychical) origin, and I should have missed a valuable but unintentional experiment.

I have returned to duty scores of men diagnosed as "myalgia," "synovitis," "arthritis," and what not, whose symptoms I have proved to my own satisfaction to be not of organic origin. What can be the result if such patients are solemnly treated as if they were suffering from real disease? The answer is given in the introduction by Colonel Aldren Turner, C.B., to the translation of *Les Psychoneuroses de Guerre*, by Roussy and Lhermitte, where he writes, "It is not exceptional to find paralyses and contractures preceded by more or less vague pains in the joints of limbs which have been bruised."

The conclusion is forced upon me that Group C is largely derived from Group B; in other words, the "lead-swinger" diagnosed as suffering from organic disease becomes, frequently at any rate, a hysteric.

This conception, which makes the phenomenon of disability precede the hysteria, is a reversal of that usually held; but it is based upon observations which have been inaccessible to pure neurologists. The only investigations I have been able to discover upon early cases were those carried out by Babinski and his co-workers, and they resulted in the overthrow of the classical description of hysteria, and the relegation of stigmata into the background.[2] If we go still nearer the fountain-head, and work for a while in the duty room of a home hospital to which the local sick are brought, a series of cases will be found there in which all manner of paraesthesias can be elicited and demonstrated.

It is often possible before examining a patient of this class to prophesy what the findings will be. Thus, in a patient who knows his complaint is diagnosed "arthritis of the knee" one can practically always demonstrate "pain" to pressure upon the adductor tubercle when this is approached by the examining hand from above downwards; a light touch with the point of a pin will be said to be painful over an area corresponding to the adductor tubercle, and similar reactions may perhaps be obtained over the head of the fibula. The reason for this is, as I believe, that the patient does not know what are the symptoms of the disease, and therefore watches for what the examining doctor is seeking, and takes care that the doctor is not disappointed.

When I first saw the patient whose case is related above I searched for evidence of pain on separating the iliac crests, and naturally therefore I found it; but when at a later date I examined the leg my mind was open as to what I might find, with the result that I only succeeded in puzzling myself. Had I examined for a stocking anaesthesia I might, and probably would, have found it.

In another case I looked only for the ordinary symptoms of a chronic appendicitis, found them, and removed the appendix. Disability persisting for a long time, I looked for extraordinary and absurd symptoms, found them, and returned the man to duty.

It is not uncommon to prick a "weak" or "paralysed" upper extremity and see the patient flinch. Then, if one asks the question, "Did you feel that?" he answers "No,"

and for the rest of the examination never flinches again. This phenomenon I have noted in three cases where there was extrinsic evidence of malingering.

Babinski demonstrates the rarity of "hysterical anaesthesia" by blindfolding the patient and telling him to point to the spot touched. This method avoids hinting at anaesthesia, but conveys a different suggestion, and I have found that the patient sometimes fails to localize the spot correctly. For either of these methods to yield instructive results a "virgin subject" is necessary.

That the blessed word "suggestion" is not a sufficient explanation for these phenomena I satisfied myself recently during a month spent in the receiving room of a London civil hospital. I examined many cases in search of suggestibility, and found it but twice—once in a nervous girl suffering from acute appendicitis, and once in a man upon whose foot a barrel had fallen whilst he was at work.

The objection will certainly be raised that those patients who become definite examples of Group C, and therefore fall amongst the hysterics, were hysterics from the start; and seeing that the differential diagnosis is, apart from extrinsic evidence, only a matter of judgement upon the part of the examining medical officer, and cannot rest upon signs or symptoms, the objection is hard to answer. I can only say, "Go and look"; make your own observations, and see if they do not lead to the opinions to which I myself have been forced.

The number of cases sent to hospital depends largely upon the medical officer. One medical officer may send five a month, another in similar circumstances may send in fifteen a month, or even fifty a month, all nicely diagnosed. If the extra ten, or forty-five, or whatever the number may be, are all claimed as hysterics I cannot contradict, or if they are "lead-swingers" I cannot prove that any would become hysterics if they were treated as suffering from real disease. I can only point to a steady influx of one type of case, to the presence of intermediate types which I myself can never differentiate, and to the increasing numbers of the finished product—the hysteric who gives a history of having been diagnosed and treated as a case of organic disease. The transition from one to the other can be explained according to modern conceptions of psycho-pathological processes, but for the present I refrain from theory.

References.

[1] British Medical Journal, October 21st, 1916. [2] *Hysteria or Pithiatism, and Reflex Nervous Disorders*, University of London Press.

## MEDICAL ASPECTS OF THE FOOD PROBLEM.

Abstract of a Paper read before the West London Medico-Chirurgical Society on April 5th.

By ROBERT HUTCHISON, M.D., F.R.C.P.,

physician to the London Hospital.

The present shortage of food as it affects health may be considered in various aspects:

1. *The Effects of a Diminution in the Diet as a Whole.*

The needs of the body in terms of energy under different conditions have been determined by physiologists with great accuracy. Thus a patient at rest in bed requires an intake of about 1,800 calories, an ordinary man engaged in sedentary or intellectual work about 2,450, and a man doing an average day's muscular work about 3,450. For really laborious work about 4,000 calories or more are required. The contention that brain workers do not require much food is not a mere scientific theory as some writers in newspapers would have us believe, but is a thoroughly established scientific fact.

If the intake in energy in the form of food falls below these figures weight is lost owing to body fat being consumed to make good the deficiency. Thus a reduction in the fat ration of ½ lb. a week would entail a loss of a stone in weight in seven months. The loss, however, is not progressive. After a time the individual "touches bottom" and is able to maintain a lower weight on the diminished diet. This result is rendered possible by the lessened output of energy required for transporting a smaller body weight and also, according to Lusk, by an economy in "fundamental metabolism." The loss of fat, also, means a lesser body surface with diminished heat loss, though this may be to some extent set off by the removal of some of the blanket of adipose tissue.

Most people have lost weight in this way during the last few months, but if the loss be not out of proportion to the total body weight they may be reassured. A 10 per cent. loss is probably not excessive, and is often accompanied by a real improvement in health. The loss of weight may be retarded by warm clothing, by avoiding unnecessary exertion, and by liberal hours of sleep. There is, of course, a danger point below which the body weight must not be allowed to fall, but it is impossible to state exactly where it is. Probably it is represented by the point at which the body begins to lose nitrogenous tissue as well as fat. Beyond this point energy suffers, and there is apparently a greater liability to disease, especially to tuberculosis. The tendency to functional nervous disorders seems also to become greater. It must be remembered that, as Greenwood has recently pointed out, many conditions of disease which have been attributed to underfeeding are really not due to too little food as a whole, but to a shortage of the specific constituents called vitamines. Hence the scantier the diet the more important it is that it should be varied in character.

2. *Effects of an Altered Ratio of the Chief Nutritive Constituents (Protein, Fats, Carbohydrates).*

The present restrictions tend to make the diet poorer in protein and fat and richer in carbohydrate than is usual in this country. The normal protein content of a freely chosen diet is about 100 grams or more, but there is no doubt that physiological needs can be met by much less. It is not likely, therefore, that health will suffer from a restriction of this constituent, but whilst growth is going on, during childhood and adolescence, and during pregnancy, care should be taken to maintain the protein intake at a high level. Extra rations of milk are allowed to children and pregnant women, and the needs of adolescents can be met by a free use of unrationed nitrogenous foods, such as fish, eggs, and the pulses, etc.

It should be remembered in this connexion that the proteins of meat are of specially high biological value, and it requires a relatively larger amount of most vegetable proteins to replace them. Fortunately, however, the biological value of the nitrogenous matter in the potato is peculiarly high. Meat has also a special power of increasing heat production, and its diminution in the diet is therefore less felt in summer than in winter. It will be interesting to see whether the present compulsory semi-vegetarianism has any effect in lessening the incidence of such conditions as gout, epilepsy, and migraine. It should also be beneficial to sufferers from chronic vascular and renal troubles.

On the other hand, there is reason to believe that diminished intake of protein, and especially of animal protein, increases liability to tuberculosis. The comparative immunity of the carnivora to tuberculosis is of interest in this connexion.

The proportion of the total energy which is taken in as fat or carbohydrate respectively varies greatly in different individuals, 100 grams of fat to 400 of carbohydrate being perhaps a fairly common ratio. From the point of view of heat and energy production in the body it is a matter of indifference which is consumed, one part of fat being equivalent to two and a quarter of carbohydrate. It is an interesting question whether there is any part played by fat in metabolism which cannot be taken by carbohydrate. Rickets, for example, has been attributed to deficiency in fat, although on rather uncertain evidence, and it is generally believed that fat has a specific power of preventing tuberculosis. On the other hand, a diet relatively rich in carbohydrates may bring out a latent tendency to diabetes, although this is not likely to happen so long as sugar is as scarce as it is at present.

It is, however, on the digestive organs that the effects of a disturbance in the normal ratio between fat and carbohydrates is most likely to be felt. A relative excess of starch tends to favour gastric hyperacidity. The present diet also is undoubtedly bulky and flatulent, mainly because it is rich in cellulose. It is chiefly in the intestine that flatulence results, owing to the production of marsh gas, but the bulk of the diet may be trying to an atonic

stomach. This may be obviated by careful chewing and by not drinking at meals. Flatulence in the colon is usually not troublesome unless associated with constipation. Care should therefore be taken to regulate the bowels with a mild laxative, if necessary, although some patients find the present diet itself rather laxative, and if the colon be irritable it may even lead to diarrhoea, which a little bismuth or chalk will correct. In all these cases green vegetables should be avoided as they are rich in cellulose and do not add much to the nutritive value of the diet.

Carbohydrates have, of course, to be avoided by diabetics for metabolic reasons and by children with so-called coeliac disease, possibly because of defective pancreatic secretion, but for both these classes of patients special provision has been made in the rations.

### 3. *Effects of Alterations in Quality of Staple Foods.*

The chief staple food the quality of which has altered since the war is bread. The present bread contains more of the husk of the wheat grain than the pre-war bread, besides added cereals such as maize, barley, rice and oats. Chemically it is superior to white bread, and experiments have shown that it is as well digested (in the physiological sense). Patients, however, often complain that it is "indigestible" (in the popular sense). Most of these complaints are imaginary, and should be disregarded. Those with whom it is most likely to disagree are old persons with defective teeth and feeble stomachs, especially if the heart's action is also defective. Patients with any form of colitis, too, may find the bread irritating. Thorough toasting and careful chewing will get over the difficulty in most cases without having recourse to the undesirable practice of sending in a demand for white flour.

The only other staple foods which have altered in quality are meat and butter. Meat is less fat than it was, but this is not a matter of much moment, as much of the fat of meat used to be wasted. Butter, of course, has largely been replaced by margarine. The food value and digestibility of this substitute are practically the same as that of the genuine article, but there is reason to believe that margarine is deficient in certain vitamines which are present in butter. Where the diet is varied, however, this is not likely to affect health, although it might be detrimental to children fed almost entirely on bread and margarine.

Although milk has not deteriorated chemically in consequence of the war it is worth considering whether it is not more impure bacteriologically than formerly. There is some reason to believe that there has been a substantial increase in tuberculosis—especially of the abdominal form—amongst children in recent months, which may perhaps be attributable to milk. This is a matter deserving further attention and inquiry.

### Conclusion.

Reviewing the whole question, it may be said with confidence that there is no reason to suppose that the food difficulties of this country, so far as they have gone at present, have had any adverse effect on health; if anything, their tendency has been perhaps in the opposite direction.

# Memoranda:

## MEDICAL, SURGICAL, OBSTETRICAL.

### COLLOID COPPER AND CANCER.

On August 3rd, 1914, a lady suffering from scirrhus of the right breast was sent to me by Dr. Hinds of Chilham, near Canterbury. A complete operation was performed, and the patient returned home. On February 17th, 1916, she came to consult me again with a recurrent growth at the lower end of the scar over the cartilages of the ribs. This was excised down to the perichondrium. In March, 1917, Dr. Hinds sent her to see me again, as she was losing flesh, and there was a nodule in the liver. Of this there could be no doubt. There was a distinct nodule, slightly tender when pressed upon, on the lower edge of the right lobe of the liver, outside the region of the gall bladder, obvious to the patient herself, who indeed had been the first to discover it.

Injections of colloid copper were commencod at once. I saw the patient again on June 15th after thirty-four injections had been given, and made a note to the effect that the nodule was decidedly smaller. In March, 1918, I saw her again. There was no trace of the nodule to be felt. The liver was not enlarged in any direction, and the patient had put on half a stone in weight. The injections, which had been continued once a week, were left off.

I am fully aware of the many sources of fallacy in such a case as this. *Post hoc* is not *propter hoc*. There is no proof that the nodule was cancerous. Even if it were, secondary deposits of cancer in a far more advanced stage have been known to disappear without any treatment at all. But the fact remains that this nodule, about the nature of which three medical men who saw it, besides myself, had no reasonable doubt, disappeared under injections of colloid copper, and that the diminution in size began immediately after the injections were begun. The unmistakable improvement in the health of the patient, which was coincident with the disappearance of the nodule, must be associated with it, but in what way, whether as consequence or cause, will depend upon the view that is taken as to the effects of the copper.

It is to be noted that liver cells appear to have a special affinity for copper salts. It does not follow, therefore, that if the colloid copper were the cause of the disappearance of the growth in this case it would of necessity have an equal degree of influence upon cancerous growths in other organs.

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### SHELL WOUND OF THE PANCREAS CAUSING PANCREATIC PSEUDO-CYST.

I was much interested in the case reported by Mr. John Morley in the JOURNAL of March 23rd, p. 341, as I saw an example of this rare condition in France last year.

The patient was a French soldier who had been wounded ten months previously (August 1st, 1916) by an aërial torpedo. In addition to various other wounds he had one in the left loin, but repeated *x*-ray examinations showed no sign of retained shell fragments. When first seen by me the abdomen was greatly distended and respiration and digestion much embarrassed. The swelling was most marked in the upper part of the abdomen, forming a rounded prominence in the epigastric, umbilical and left hypochondriac regions; the dullness over the tumour was continuous with that of the liver; the stomach, recognized by succussion, was displaced into the left iliac and hypogastric regions. On June 5th, 1917, a median supra-umbilical incision was made and a large tense cyst found, covered above by the hinned-out margin of the liver. One litre of yellow, slightly turbid fluid was aspirated; the cyst was then partly drawn out of the abdomen and freely opened, when two more litres of thicker fluid, more like thin pus, were evacuated. The cyst was so large that the boundaries could not be definitely determined by the exploring finger. The cyst was marsupialized and drained for about three weeks; as there was then no further discharge the wound was allowed to heal up, and the patient, whose general condition had enormously improved, was sent to a convalescent hospital.

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### THE VALUE OF THE WASSERMANN TEST.

Recently I attended a pregnant woman who came to me with a chancre of seven weeks' duration; in spite of its typical and obvious appearance it was said not to be syphilitic because the Wassermann test was negative. In December, 1917, a patient attended for an obvious tertiary lesion; he had been discharged from hospital some few years ago as cured, because his blood was negative. In 1917 a lady went to a well-known surgeon for diagnosis; syphilis was suspected, and blood was sent to two different institutions; the report from one was negative, from the other positive; she had syphilis. Blood was drawn off, and sent to a well-known hospital, in two tubes and under two names; the report on one was negative, on the

other positive; the tests were made by the same man and on the same day; the patient had syphilis. A man attended in December, 1917, for a sore and gonorrhoea; spirochaetes were not found and his blood was negative, but he was deemed suspicious; he was only given mercury. In March I gave him novarsenobillon 0.6 gram at once, and the result was striking; the sore is now practically healed.

The Wassermann test carried out in the usual way—not with cerebro-spinal fluid—is useless; if negative it gives patients a false sense of security. Whether the result be negative or positive it means nothing as to a patient's future; whatever the result, the treatment must be carried out thoroughly.

All patients should know that one course of salvarsan does not cure; they must have more, and not large doses of mercury. My opinion is that marriage should not take place until three years at least have elapsed, irrespective of the test.

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# Reports of Societies.

## TREATMENT OF MALARIAL RELAPSE.

Colonel Sir Ronald Ross, Consultant in Malaria, War Office, contributed to meetings of the Society of Tropical Medicine on February 15th and March 15th the results of an investigation started under his direction on February 15th, 1917, with regard to the treatment of malaria. It was founded upon the work done at the four hospitals for which he was from the first Consultant in Malaria—namely, in Aldershot, London, Oxford, and Epsom. A number of officers were concerned with the treatment and pathological work, including Lieut.-Colonels A. D. Milne, C.M.G., E.A.M.S., S. P. James, I.M.S., R. McCarrison, I.M.S., and Major J. B. Stephens, R.A.M.C. The number of cases dealt with was 2,460; the large majority were infected during 1916 on the Salonica front, and were examples of benign tertian. Nearly all were relapses, but a few were original infections. The word "relapse" was taken to mean the relapse of fever clinically like malaria, whether asexual parasites were found or not. Rare cases, in which a sudden increase of asexual parasites without fever occurred, were noted as relapses. Relapses occurring in malaria wards during or after a given course of treatment were always verified by the special malaria officers. Cases, however, could not be detained indefinitely, and it was therefore necessary to issue notification cards with all cases discharged from the malaria wards, with instructions to report relapses to the special malaria officers. These instructions were largely obeyed, but it was impossible to guarantee that every relapse had been reported. Further, the number of relapses given is not final, partly because some of the cases are likely to relapse in the future, and partly because further examination of records may disclose the occurrence of relapses hitherto overlooked. For these two reasons the number of relapses recorded was probably below the true figure.

### *Frequency of Relapses without Treatment.*

Before studying the effects of different treatments it was thought advisable to obtain statistics as to the frequency of relapses occurring among men who had been taking quinine but in whom the drug was stopped. Accordingly, 193 men admitted to the Oxford hospital either for attacks in progress or for recent attacks were watched carefully, but given no quinine; 88 relapsed within twenty-seven days after quinine treatment was stopped, 76 were not sufficiently well to allow quinine to be withheld any longer, and only 29 were considered well enough to be discharged from hospital without treatment. Thus during the month this part of the inquiry lasted only 15 per cent. of the men who remained untreated by quinine escaped either relapses or illness, so that 85 per cent. of such untreated cases remained ill, and 45.6 per cent. actually suffered from relapses during the period.

### *Treatment of Relapsing Cases.*

The trials with various forms of quinine treatment continued from March 23rd to October 17th, 1917. The various treatments tried were of four classes: (*a*) Anti-relapse quinine prophylaxis given, to 1,040 old cases of malaria; comparatively small doses, amounting to about 60 grains a week, distributed in various ways, reduced relapses to about 10 per cent. of the cases a month, and also diminished the severity of the relapses that occurred; 5 grains daily were less effective than 10, but 15 grains daily were no more effective than 10 grains daily, and were less well borne; (*b*) short sterilizing treatments; (*c*) long sterilizing treatments; and (*d*) mixed treatments, given to 1,420 cases.

The trials showed the difficulty of sterilizing cases entirely, and that success tended to vary directly with the magnitude of the daily dosage. The best treatment for old cases of malaria was thought to be a system carried out by Captain Meredith Harrison, R.A.M.C., at the Connaught Hospital, Aldershot. It was used by him between July 10th and October 6th, 1917, for forty-nine chronic cases of malaria, mostly of benign tertian, and mostly arrived from Salonica. Of these, only five had relapsed after the cessation of the treatment in October until the end of February, 1918. Three-fourths of these cases were examined after their original treatment at the Connaught Hospital once a week as regards clinical condition, blood, and weight; as most cases of malaria in the Aldershot Command were closely in touch with the Connaught Hospital, it is thought that the number of cases given as relapsing is accurate. The percentage of cases relapsing was therefore only 10.2. The time which elapsed between the end of the treatment and the beginning of the relapse (in the five cases which did relapse) varied from sixteen to seventy-two days and averaged 34.5 days. Captain Harrison reports that with this treatment the fever was reduced within from twelve to twenty-four hours, and that no asexual parasites could be found after forty-eight hours. The effect of the treatment as regards general improvement of health was good. The treatment was well borne by the patients, except for deafness and tinnitus, and there was very little vomiting. But the patients always object to stopping in bed for twelve days; and we are informed that this line of treatment is not yet to be definitely recommended until its effect on the sight and hearing has been more exactly measured.

The treatment was as follows: The patient was put to bed for twelve days and given daily throughout this period 15 grains of quinine bihydrochloride intramuscularly in each deltoid muscle, together with 10 grains of quinine hydrochloride in anticachexia mixture No. 1 thrice daily, totalling 60 grains of quinine daily for the twelve days. After this the patient was allowed up, and given for three days anticachexia mixture No. 2, four times a day (60 grains of quinine daily by the mouth). After this the patient was given anticachexia mixture No. 3, four times daily for fourteen days (20 grains of quinine daily). He was allowed to do light work all this time. The prescriptions were as follows:

*Anticachexia Mixture No. 1.*

| | |
|---|---|
| Quinin. hydrochlorid. ... ... ... | gr. x |
| Tinct. ferr. perchlorid. ... ... ... | ♏ v |
| Liq. strych. (*B.P.*) ... ... ... ... | ♏ v |
| Liq. arsenic. hydrochlor. ... ... ... | ♏ v |
| Acid. nitrohydrochlor. dil. ... ... ... | ♏ v |
| Magnes. sulphat. ... ... ... ... | ʒ ss |
| Syrup. tolut. ... ... ... ... | ʒ ss |
| Glycerin. ... ... ... ... ... | ♏ x |
| Aquae ... ... ... ... ad | ℥ j |

For a dose, to be given as directed after food.

*Anticachexia Mixture No. 2.*

As No. 1, but add

| | |
|---|---|
| Quinin. hydrochlorid. ... ... ... | gr. v |
| Acid. nitrohydrochloric. dil. ... ... | ♏ v |

to the dose.

*Anticachexia Mixture No. 3.*

As No. 1, but reduce

| | |
|---|---|
| Quinin. hydrochlorid. ... ... ... | gr. v |
| Acid. nitrohydrochloric. dil. ... ... | ♏ v |

in each dose.

The mixed treatment included the use of tartar emetic, acid arsenoids, sodium quinine sulphonate, ethyl quitenine hydrochloride, and collosol quinine, but the results were not satisfactory.

### *Experiences in Macedonia.*

Sir Ronald Ross also gave particulars of the results of inquiries addressed by the D.M.S. Salonica to a number of

medical officers serving there. (1) Out of 111 officers who expressed definite opinions 71 considered that 10 grains of quinine given twice a week as a prophylactic measure were of no value or were objectionable. (2) In reply to a question as to the optimum dosage for relapses in regimental aid posts, where patients may be retained for treatment for a period not exceeding three days, 63 per cent. of the medical officers were in favour of 30 grains daily. (3) In reply to a question as to the optimum dosage for recurrent cases doing duty after being kept in regimental aid posts for a few days, the majority of the 107 officers who replied recommended fixed doses of quinine for periods varying up to three and a half months. The dose recommended varied from 10 to 30 grains daily, but some of the officers recommended the gradual reduction of the dose as the course progressed. (4) In reply to a question as to the optimum dosage for recurrent cases of malaria returned from hospital, 65 out of 105 officers advised the continuance of the same daily dose of quinine, and of these 33 advised 10 grains daily for from one month to three and a half months, twelve 20 grains daily for similar periods, and sixteen 30 grains daily. Others advised the gradual reduction of the quinine as the course progressed. Subsidiary treatment was recommended by many officers.

*Elimination of Quinine.*

Acting Staff Sergeant M. Nierenstein made a large number of chemical examinations, and in an interim report states: "It seems more or less apparent that there is a tendency for the excretion of the quinine passed to reach a concentration of 7 to 11 grains per litre of urine. This appears to be the case for all salts experimented with (except the lactate), and the fact does not appear to be altered by the different methods of administration. Thus, these results flatly contradict all statements to the effect that quinine given intramuscularly or intravenously is more or less readily excreted than quinine given orally. Moreover, no one quinine salt appears to be more readily eliminated in the form of its base than another salt. These results have been obtained from 1,366 analyses made on 624 different specimens; and have since been confirmed in quite a number of estimations accumulated during January and February, 1918."

# Reviews.

## EXOPHTHALMIC GOITRE.

PROFESSOR G. ROUSSY'S well illustrated monograph on the changes in the thyroid gland in Graves's disease,[1] destined to be read at the Twenty-fourth Congress of the Alienists and Neurologists of France and French-speaking countries, planned to be held at Luxemburg on August 3rd to 7th, 1914, has just come into our hands, and it is perhaps curious that a discussion on a disease rendered more frequent by wars should have been arranged for a congress made impossible by the outbreak of hostilities. The subject was considered at the congress in 1895, when the thyroid changes had comparatively recently been described by Professor W. S. Greenfield and Renaut; and Brissaud, who introduced the discussion, hesitated about abandoning the nervous origin of the disease. Since then fresh data and methods have established the part played by the thyroid, and raised the question as to the significance of the persistent or enlarged thymus. As at that time exophthalmic goitre was regarded rather as a syndrome than as a disease, Roussy now separates off the rather rare cases of false exophthalmic goitre—for example, those due to the simple goitre compressing and irritating the sympathetic and those due to reflex causes—and then tabulates the following forms: the characteristic disease, the forms due to tuberculosis, to syphilis, to malignant disease, and to goitre of the thyroid gland, and the large group of the *fruste* cases, including those due to thyroidism and thyro-toxic factors. A full study of the morbid anatomy shows that there is first of all an inflammation of the thyroid, which is often overlooked, and that the presence of lymphoid collections in the gland itself and the enlargement of the thymus and the neighbouring lymphatic glands are perhaps relics of this thyroiditis. These lymphoid areas in the thyroid, found by Roussy in 14 out of 15 cases of Graves's disease, in 2 out of 50 ordinary goitres, and in none of 60 normal thyroids, are well reproduced in the figures. The thyroid changes are those of a compensatory parenchymatous hyperplasia, and as a result the secretion is altered.

The problem of the thymus is thoroughly discussed; the first reference to its persistence and enlargement given is that by the late Sir James Goodhart in 1873, but it may be pointed out that it was noticed as early as 1858 by Markham. While admitting that the significance of the thymic change is not yet settled, Roussy believes that it probably has some influence on the symptoms and complications, if not on the establishment, of the disease.

The various methods of treatment are discussed, and a preference for $x$ rays rather than surgical interference definitely expressed. The subject is so systematically considered that this monograph constitutes a valuable source of reference.

[1] *Les lésions du corps thyroïde dans le maladie de Basedow.* By Gustav Roussy, Professeur agrégé à la Faculté de Médecine de Paris. Paris: Masson et Cie. 1914. (Roy. 8vo, pp. 135; 2 coloured plates and 10 figures. Fr.3.)

## INJURIES OF THE FACE AND JAW.

IN translating MARTINIER and LEMERLE'S little book on *Injuries of the Face and Jaw*,[2] Captain LAWSON WHALE has done surgery an opportune service. Surgeons have had, or should have had, appreciative admiration of the great perfection to which dental surgeons have brought their mechanical skill, but it has been reserved for the conditions of war to give a complete demonstration of the extent to which prosthesis may be applied. Moreover, those dental surgeons who are also surgeons in the ordinary sense have rapidly exhibited a transference or extension of their mechanical skill to the realm of plastic repair and reconstruction, which has led to results surpassing anything in the whole literature of the past. It requires but a glance at the communications of the author himself, of Valadier, Kazanjian, and Burrows in the *British Journal of Surgery*, to give one example, to realize what is being done. It is indispensable for those who take up this work that they should be familiar with what has already been done by French surgeons to perfect preventive, restorative, and permanent prosthetic apparatus. The present work deals only to a limited extent with the plastic branch of the art, but it affords an invaluable record of what can be done for the prevention of deformity in injuries of the jaws, for the repair of distortion and defect, and for the amelioration of facial, nasal, and palatine destruction or deformity. One merit of the book for the purposes of the surgeon who must call the expert orthodontist to his aid is its brevity.

The contribution to the treatment of gunshot wounds of the jaws published by the Austrian journal of stomatology,[3] under the editorship of Dr. EMIL STEINSCHNEIDER, is a well illustrated monograph by many contributors, and indicates that enemy dental surgeons are dealing with their war problems on much the same lines as our own. They have little if anything to teach us. Their apparatus is derived from original French models, but has the appearance of not being quite so delicate; consequently it must be less comfortable for the patient. The plastic work gives good cosmetic results, but there is no indication of the more difficult achievements, such as the making of new noses. The radiograms are good, well planned, and well analysed. It is surprising to see Lane's plates used in the treatment of suppurating wounds of the lower jaw with loss of substance. The book will interest those engaged in similar work.

[2] *Injuries of the Face and Jaw, and their Repair; and the Treatment of Fractured Jaws.* By P. Martinier and Dr. G. Lemerle. Translated by H. Lawson Whale, M.D., F.R.C.S. London: Baillière, Tindall, and Cox. 1917. (Cr. 8vo, pp. 345; 168 figures. 5s. net.)

[3] *Beiträge zur Kieferschusstherapie, herausgegeben von der Osterr. Zeitschr. f. Stomatologie.* Redigiert von Dr. Emil Steinschneider. Berlin and Vienna: Urban and Schwarzenberg. 1917.

## SURGICAL APPLIED ANATOMY.

TREVES'S *Surgical Applied Anatomy*[4] has long been a favourite, but even the most popular books must keep abreast of the times. If there was one man who could

[4] *Surgical Applied Anatomy.* By Sir Frederick Treves, Bt., G.C.V.O., C.B. Revised by Arthur Keith and W. Colin Mackenzie. London: Cassell and Co., Ltd. 1918. (Fcap. 8vo, pp. 702; 153 figures, 74 in colour. 10s. 6d. net.)

work the miracle of rejuvenating a classic without sacrificing the divine spark, it was Professor ARTHUR KEITH. He has done more. In its present form this little volume teems with pleasant surprises; apt illustrations of the importance of anatomical bearings upon surgery are culled from literature and from sources unexpected, with a constant recurrence of names that produces a living atmosphere. It is not to be criticized: it is to be enjoyed, and with the enjoyment student and master will both absorb valuable information and reminder. Dr. COLIN MACKENZIE, whose name appears on the front page, is fortunate in inheriting a great tradition which, if the changes in the seventh edition be due to him, he has known how to value.

## NOTES ON BOOKS.

THE fourth volume of the *British Journal of Surgery*[5] for the year 1916–17 does credit to the editorial secretary, Mr. Hey Groves, and to the large editorial committee who direct it. Judged in volume form, from the point of view of a permanent place on book-shelves already tending to be overburdened, the opinion may be ventured that articles such as those on contemporary surgery in other lands, interesting as they certainly are, are a little out of place, at any rate at the present time. The greatest value attaches to contributions such as that of Mr. Cope, based, it is true, on a few personal cases, but giving a complete summary of recent work on the surgery of the pituitary gland, and illuminated by an excellent anatomical study; the series of papers on gunshot wounds of the abdomen; on arterio-venous aneurysms, and on diverticula of the intestine; and the papers by Bashford on the histology and general pathology of the tissues in war wounds. These and others like them are permanent contributions to surgical literature and progress. Congratulations to our contemporary.

Mr. CANDY'S *Manual of Physics for Medical Students*[6] is a little book written especially to help candidates through the physics of the preliminary or first medical examination. It is well arranged and clearly written, and appended to each chapter are written exercises.

Dr. MALONEY'S book on *Locomotor Ataxy*[7] has been written to show, first, how this disease is the microcosm of all nervous disorders, and secondly, how amenable it is to special forms of systematic treatment on the lines of mental therapy. The volume should be of interest to specialists in nervous disorders, as it expounds a new idea.

Professor ANDERS'S *Textbook of the Practice of Medicine*,[8] now in its thirteeth edition, is one of the standard volumes upon which medical students and practitioners on the other side of the Atlantic rely. It is well written, full of information, up to date, and, above all, practical. Want of space forbids us to say more of its merits; it is a book that may be warmly commended.

Miss BEATRICE GOODALL-COPESTAKE has written a sound and comprehensive handbook on the *Theory and Practice of Massage*,[9] which, while imparting a knowledge of the various procedures—as far as it is possible to do so in a book—also introduces the nurse and massage pupil to the rudimentary knowledge of those conditions in the treatment of which she may be required to help the physician or surgeon. The book is well illustrated, and includes an index and a glossary. The term "anterior poliomyelitis" is not derived from "anterior pole," as is stated on p. 196.

[5] *The British Journal of Surgery.* Bristol: John Wright and Sons. 1917. (Vol. iv. 30s.)

[6] *A Manual of Physics, Theoretical and Practical, for Medical Students.* By Hugh G. H. Candy, B.A., B.Sc.Lond., F.I.C. Second edition, enlarged. London: Cassell and Co., Ltd. 1918. (Fcap. 8vo, pp. viii + 451; 280 figures. 7s. 6d. net.)

[7] *Locomotor Ataxia (Tabes Dorsalis).* By William J. M. A. Maloney, M.D.Edin. London and New York: D. Appleton and Co. 1918. (Med. 8vo, pp. xxi + 299; 97 figures. 15s. net.)

[8] *A Textbook of the Practice of Medicine.* By James M. Anders, M.D., Ph.D., LL.D. Thirteenth edition. Philadelphia and London: W. B. Saunders Co. 1917. (Roy. 8vo, pp. 1259; 80 figures. 25s. net.)

[9] *The Theory and Practice of Massage.* By Beatrice M. Goodall-Copestake. London: H. K. Lewis and Co., Ltd. 1917. (Demy 8vo, pp. xvi+251; 56 figures. 8s. 6d. net.)

## A VEGETABLE MILK.

[*From a Correspondent.*]

IN these days of agalactia any reasonable substitute for milk is certain of a welcome, so that particular interest attaches to the soy bean, an alimentary plant grown on a very large scale in China, and imported into this country by hundreds of thousands of tons annually for the sake of the oil it contains, which is utilized in the manufacture of soap, margarine, etc. More interesting from the alimentary point of view is the fact that it can be made to yield a substitute for milk, which in respect of appearance and composition so nearly approximates the familiar article as to be wellnigh indistinguishable therefrom. The process is simple. Five ounces of the bean are soaked overnight in a quart of cold water; it is then coarsely ground, mixed with the water in which it has been soaking, and filtered through muslin. The result is a milky fluid with a rather strong smell of haricot bean, which disappears after it has been raised to boiling point. Infants take it readily, and, mixed with tea or coffee, the taste is imperceptible. Fresh soy bean milk has a faintly acid reaction; it is quite homogeneous under the microscope, and its physical properties are those of cow's milk; rennet causes it to curdle, lactic acid germs cause it to undergo lactic acid fermentation. When boiled it "rises" like ordinary milk and forms a pellicle on the surface. Its composition is: Casein 3.13 per cent., fats 9.89, but it lacks carbohydrates, a shortcoming which can easily be remedied. As the fatty constituent is an oil, butter cannot be made from soy bean milk, but it can be made to provide cheese (120 grams of the bean yields 184 grams of cheese), and the cheese can be made to resemble any of the popular cheeses in the market; it is merely a question of employing the proper flavouring ferment. Soy-bean milk can be retailed at 3 centimes a litre. The residue, after making milk, is still very rich in alimentary principles, and can be worked up into very palatable "almond" cakes or biscuits. Being practically free from starch, these cakes are specially suited for consumption by diabetics. Roasted, the bean provides a colourable imitation of coffee, just as do barley and oats, to what a satisfactory degree only those who make use of these substitutes will understand. The soy bean and its derivatives are very rich in phosphates, so that infants reared on the milk are never likely to develop rickets.

Unfortunately the soy bean does not take kindly to the English climate, but it grows freely in China, where it is indigenous, in southern France, in Algeria, and in many parts of the United States, where the plant is used extensively for fodder. There are a number of varieties possessed of special qualities according to climate and the object in view—for example, oil, or milk, or cattle food. A practical idea of its alimentary value may be formed by contrasting the cost of this as compared with other albumins: 100 grams of albumin, at before-the-war prices, would cost—from egg 1s. 8d., from meat 1s. 4d., from pork 8d., dried peas 3d., and from soy bean 2d. The bean contains four times as much mineral constituents as meat, and is twice as rich in phosphoric acid. Here is an analytical table showing the comparative values of soy beans and some of the pulses in common use as food in this country:

| | Water. | Nitrog. Constituents. | Fats. | Starch. | Cellulose. | Ash. |
|---|---|---|---|---|---|---|
| Lentils— | | | | | | |
| Maximum ... | 13.50 | 24.64 | 1.45 | 62.45 | 3.75 | 3.45 |
| Minimum ... | 11.00 | 19.36 | 0.50 | 56.07 | 2.88 | 1.75 |
| Haricot beans— | | | | | | |
| Maximum ... | 20.40 | 26.46 | 2.46 | 63.23 | 6.00 | 5.65 |
| Minimum ... | 8.50 | 13.80 | 0.40 | 52.04 | 1.95 | 2.20 |
| Peas— | | | | | | |
| Maximum ... | 14.20 | 26.63 | 1.65 | 61.10 | 3.52 | 3.70 |
| Minimum ... | 9.80 | 18.88 | 0.85 | 56.18 | 2.38 | 2.00 |
| Broad beans— | | | | | | |
| Maximum ... | 15.30 | 26.51 | 1.50 | 58.03 | 7.86 | 3.26 |
| Minimum ... | 10.60 | 20.87 | 0.80 | 50.89 | 5.24 | 2.06 |
| Soy beans— | | | | | | |
| Maximum ... | 11.30 | 38.41 | 14.80 | 32.11 | 6.20 | 5.20 |
| Minimum ... | 10.00 | 34.85 | 12.95 | 26.74 | 3.60 | 4.35 |

British Medical Journal.

SATURDAY, APRIL 13TH, 1918.

## THE NEW MILITARY SERVICE BILL.

THE introduction of the new Military Service Bill and the special provision which it contains with regard to medical men makes it opportune briefly to recall the steps by which the present situation, so far as it specially affects the medical profession, has been brought about. The annual general meeting of the British Medical Association in Aberdeen had ended a few days before the outbreak of war, so that the Association had no special machinery in existence for dealing with the emergency. The War Office immediately called up the medical officers of the Special Reserve, and the medical officers of the Territorial Force belonging to the combatant units were mobilized with those units. Medical officers *à la suite* of the Territorial general hospitals were mobilized as those hospitals were got ready. With the regulars and reemployed regular officers the total number of medical officers obtained from these sources was about 4,000, and nearly three-fourths of them were withdrawn completely or in part from the civil profession. At the same time an appeal was made for volunteers, one of the terms being that the volunteer undertook to serve if required for at least twelve months, with the right then to relinquish his commission. The response to this appeal produced about 1,140 by the end of 1914, and about 2,700 by the end of 1915. The first step spontaneously taken by the organized body of the profession to meet the emergency disclosed by the German advance into Belgium and Lord Kitchener's appeal to the manhood of the country was taken at the instance of the late Dr. Hamilton of Hawick by the Scottish Committee of the British Medical Association. By September the Scottish Medical Service Emergency Committee, consisting of representatives of Scottish universities and medical corporations and the British Medical Association, had been formed. In England and Wales preliminary arrangements were undertaken by committees of the British Medical Association, which reported to the annual meeting in 1915, when the Central Medical War Committee was constituted. It was instructed "to organize the medical profession in such a way as will enable the Government to use every medical practitioner fit to serve the country in such a manner as to turn his qualifications to the best possible use, and to deal with all matters affecting the medical profession arising in connexion with the war." Local Medical War Committees were set up throughout England and Wales to act with the Central Medical War Committee and to advise it as to local conditions and as to practitioners in the localities who could most easily be spared. The Committee of Reference of the Royal Colleges in England was set up early in 1916 to consider cases of doctors on the staffs of hospitals and medical schools in the metropolis, and such other special cases in England and Wales as might be referred to it. An Irish Medical War Committee was also established. Schemes were instituted by the Central Committees in England and Wales, and in Scotland, for the enrolment of all medical men up to the age of 45, the limit for general service in the R.A.M.C. The enrolled person gave an undertaking to accept service when called upon by the Committee, and the Army Council undertook to apply to him the principle that a medical man thus offering himself should not be called upon to fulfil his obligation of commissioned service for more than twelve months consecutively.

The passing of the second Military Service Act, 1916, had the effect of imposing compulsory service on all medical men under 41. The central medical committees, thereafter called "professional committees," were recognized by an Order in Council, and were entrusted with the duty of selecting at the right time in each case the particular medical men who could be spared from their civil work with least injury to the civil population, and of retaining in their civil work those most needed there in the public interest. The Army Council undertook to refrain from applying its compulsory powers as to combatant service to a doctor of military age if, and so long as, he was enrolled and undertook to serve, and if required did serve, as a commissioned officer in the R.A.M.C. whenever this might be found necessary by the central professional committee. When called upon he was given the right of appeal to the central professional committee. If at the end of the first or any twelve months' service a medical man relinquished his commission, he, if under 41, remained liable to the Military Service Acts, but if he then enrolled he reverted to the position in which he was before he took a commission; that is to say, he went back amongst those from whom the central professional committees selected doctors for commissioned service in the R.A.M.C., subject to due consideration of the needs of the locality and his personal circumstances. The enrolment scheme continued to apply to doctors over military age, especially those from 41 to 45, and in June, 1916, shortly after the passing of the second Military Service Act, the War Office announced that it was prepared to give commissions in the R.A.M.C. to medical men between 45 and 55 willing to undertake whole-time general service in the United Kingdom. Incidentally it should be noted that newly qualified medical men automatically passed into the Reserve, and were commissioned in the R.A.M.C. (S.R.), subject only to their being pronounced physically fit on medical examination.

On the establishment of the Ministry of National Service recruiting in all its branches was transferred from the War Office to that Ministry, and medical recruiting became especially the care of its medical department, with which the professional committees have been in communication throughout.

At present temporary R.A.M.C. officers of military age on expiration of their contract are required, if they renew, to engage for the duration of the war. If an officer, however, does not wish to renew he retains his right of appeal to the professional committee, which, in deciding whether or not he should rejoin, takes into consideration the needs of the civilian population of the locality in which he practises and his personal circumstances. It is to be noted that medical officers of military age intending to relinquish their commissions after October 31st, 1917, were warned that they would probably be recalled shortly.

The first clause of the new bill fixes the military age at from 18 to 51, but there is a proviso that by an Order in Council the upper limit of age may be raised to 56 as respects men generally, or as respects any class of men, and it shall be so fixed "as respects any person being a duly qualified medical practitioner." Clause 4 gives power to make regulations by an Order in Council to establish "special tribunals, committees, or panels for dealing with particular

classes of cases," and to determine the grounds on which application may be made to the tribunals and the rights of appeal.

The Central Medical War Committee, at its meeting on April 10th, decided, after full discussion, not to press for the insertion of any amendment in the bill now before Parliament in so far as it relates to registered medical practitioners. It is felt that the older men who will now become subject to military service will in most cases serve their country best by placing themselves at the disposal of the central professional committees for medical work, in a military or civil capacity, which will release younger practitioners for active service. The method, no doubt, will vary according to local and individual conditions, but it would seem that schemes for local arrangements would produce less dislocation of practice than any general plan of long-distance substitution between the areas which are relatively understaffed and those which are more plentifully supplied with doctors. Although the total number of medical men who may be made liable to military service under the bill is large—between 6,000 and 7,000—it is unlikely that any considerable proportion would be called upon; if this is so, only a minority would be directly affected.

In the altered situation which will be brought about by the enactment of the bill, the Ministry of National Service will, doubtless, desire to remain in the closest collaboration with the Statutory Professional Committee. But it is probable that henceforward the decision on the indispensability of individual practitioners, or on questions of priority, will rest ultimately in the hands of the Ministry. The fullest use will, no doubt, be made of the advice and opinion of the professional committees, but, as in the case of all other tribunals, the last word will be said by the Ministry of National Service. In this respect the legal position will be changed, though it is not anticipated that in practice any conflict will arise between the professional committees and the Ministry.

## THE TEACHING OF ANATOMY.

IN Edinburgh, as in other medical centres, there is a growing feeling that our modern medical curriculum stands in need of revision, nor is it difficult to understand how this feeling has arisen. Every decade that comes along finds the medical student saddled with a new subject and a new professor, until at the present time he has to run the gauntlet of some fifteen of them. The student finds that as new professors appear the old ones extend their subjects both in scope and in detail. He finds, too, that instead of co-ordinating their collective efforts so as to make him an efficient medical man, his professors insist more and more in teaching their subjects as if their particular branch of knowledge was the sole object of study. The present discontent, then, relates not to the nature and number of subjects included within the medical curriculum, but to the fact that their professors seem apt to forget that they are members of a common team whose sole duty should be the production of efficient medical men.

During the past winter session this matter has been the subject of serious and instructive debate in Edinburgh. The members of the Pathological Club of that city invited Sir James Mackenzie to initiate the discussion; it was continued by the professor of chemistry. Now has come the turn of the anatomist—who, in the eyes of many, is regarded as the chief delinquent. It was a happy choice which led to the invitation of Professor Elliot Smith of the University of Manchester to open the discussion on "the teaching of anatomy."[1] He has made additions of the utmost importance to the subject he professes, but has never permitted his anatomical research to obscure his medical vision. In Professor Elliot Smith's opinion "anatomy should be regarded as an integral and intimately co-ordinated part of the whole medical course, and it should be the business of the teacher to give expression to this broad view in his teaching . . .; the teaching, in other words, should be directed towards the needs of the practice of medicine; and it should be the business of the teacher of anatomy to keep sufficiently in touch with the progress of medicine as a whole to direct his teaching towards the right aim." Therein we believe Professor Elliot Smith enunciates a very important truth; no man is qualified to teach anatomy rightly unless he follows closely the progress made in all departments of medicine. "No man," he says, at another place, "can be a really efficient and stimulating teacher unless his own mind is kept constantly alert by original investigation. Unless this is so, he is merely a purveyor of second-hand goods. The man who is actually engaged in research, and can give the student first-hand information, can also describe from his own experience the difficulties that have to be overcome, and the way progress is actually achieved." In the teaching of anatomy, as in the teaching of every other medical subject, the first essential is to find the right man. Having found such a man, the scope and manner of his teaching become secondary matters.

Professor Elliot Smith had stringent things to say about the manner in which osteology is taught. Descriptive osteology! The amount of mental effort which has been wasted over committing to memory the identification marks and multiple surfaces of the bones of the hand and foot! "I have the most vivid recollection," he says, "of the manner in which those first two terms of osteology rapidly killed all interest in the subject. It was not merely that I ceased to learn anything from the lectures, but a positive and intense repugnance to the business of acquiring a knowledge of the bones took possession of me." His opinion is that the bones are as much a part of the body as the muscles, the blood vessels, and the nerves, and should be studied as the student makes his dissections. In the dissecting room the student can see for himself the various factors which mould and shape a bone. He speaks of the osteology class as a "wicked and sterilizing farce which is still permitted to waste the student's time and kill his natural interest in the subject of anatomy."

The late Professor Franklin Mall, who did more than any one to raise anatomy to its present high position in the United States of America, abolished lectures as a means of teaching anatomy. We entirely agree with Professor Elliot Smith that in this he was in error. "I agree with Mall to this extent," he said, "that taking into consideration the limited amount of time at the disposal of the student and the excellence of his textbooks, the attempt to deliver a systematic course of lectures is wholly indefensible. . . . Instead, however, of employing the time in expounding to the student information which he can more usefully acquire in the dissecting room or in the study of his textbooks, the teacher should make it his business in the lectures to deal with aspects of anatomy which the student is unable adequately to learn in the ordinary work of the dissecting room—such, for example, as the lymphatic system, certain parts of

[1] See *Edinburgh Medical Journal*, March, 1918, where there are full reports of the papers read by Professor Elliot Smith, Professor David Waterston, Professor Arthur Robinson, and of the discussion which followed.

the nervous system—for instance, the clinically important but much neglected sympathetic system—and the anatomy of the viscera." We entirely agree with Professor Elliot Smith that the constant use of a living model is absolutely essential for the right study of anatomy; in his own arm, leg and body, or on those of his working partner, the student can identify and study the dissected part in its living condition. *X* rays and skiagrams have given the anatomist, as well as the physician and surgeon, a new means of studying the anatomy of the living body. "The primary value of dissection," says Professor Elliot Smith, "is to enable the student to find his way about the body. Much of the knowledge which he acquires is of a subconscious nature, but none the less real on that account. By a limited experience I have learnt to find my way from Princes Street to the University, but I cannot name a single street or landmark, nor give more than the vaguest description of the route; yet I have the essential knowledge which meets my needs. The vital knowledge of anatomy that it is essential for the student to acquire is of a similar nature."

There is one grave defect in the teaching of anatomy which neither Professor Elliot Smith nor those who followed him in the discussion in Edinburgh referred to—one which exerts a particularly prejudicial influence in London. In metropolitan schools the teaching of anatomy is paralysed by the conditions which candidates have to face in the examination room. When the teacher ought to be directing his efforts to instilling the knowledge which will help his student in the recognition and treatment of disease he has to teach him to pass examinations—examinations which have become fossilized under the influence of hoary tradition. We cannot have rational teaching in anatomy, or in any other subject, until we obtain a rational method of examination. Without exception all written examinations in anatomy—at least, all questions in descriptive anatomy—lead to the accumulation and perpetuation of barren knowledge. If students were subjected to practical examinations on the living as well as on the dissected body, we should soon hear the last of the complaints often urged by physicians and surgeons—that the anatomy taught to students is useless for clinical work.

## INTERALLIED SCIENTIFIC FOOD COMMISSION.

AT an interallied conference, which was held last November in Paris, it was agreed that a Scientific Food Committee should be formed containing two delegates from each of the following countries:—Great Britain, France, Italy, and America. This committee was to have its permanent seat in Paris, and was to meet periodically in order to examine, from the scientific point of view, the interallied programme for food supplies. It was empowered to make any propositions to the allied Governments which it thought fit. The delegates appointed from the various countries were:—Great Britain: Professor E. H. Starling and Professor T. B. Wood; France: Professor Ch. Richet and Professor E. Gley; Italy: Professor Bottazzi and Professor Pagliani; America: Professor R. H. Chittenden and Professor Graham Lusk. The first meeting of this Commission was held in Paris on March 25th, 1918, and the following days. At their first sitting the Commission was received by M. Victor Boret, Minister of Agriculture and Food. In his opening address M. Boret pointed out that the object of the conference was to study the best means of utilizing the very small food resources at the disposal of the allies so as to effect an equitable distribution of the available food supplies among the allies, having proper regard to the facts of physiology and political economy. He sketched shortly the work of the Commission, and his suggestions were embodied later in a series of questions which were adopted by the Commission as the problems that would immediately occupy its attention. The Commission agreed to establish a permanent central secretariat in Paris, M. Alquier being appointed secretary. In addition to the central secretariat it was agreed that a secretary to the Commission should be appointed in each of the allied countries. At its meetings, which lasted till March 29th, the Commission considered many important questions relating to the minimum food requirements of man, and to the production and distribution of food supplies. The Commission will reassemble at intervals, in Paris or in some other of the allied capitals. Professor Gley has stated that it will probably meet next at Rome towards the end of this month.

## ARMY MEDICAL ADVISORY BOARD.

THE Army Medical Advisory Board, established in 1901, has been in abeyance since the beginning of the present conflict. It has now been considered advisable to appoint a new Advisory Board somewhat differently constituted and with a smaller number of members. The Director-General, Lieutenant-General T. H. J. C. Goodwin, C.B., C.M.G., D.S.O., is president, and the other members are Major-General Sir Bertrand Dawson, G.C.V.O., C.B., M.D.; Major-General Sir Berkeley Moynihan, C.B., F.R.C.S.; Colonel W. H. Horrocks, C.B., A.M.S.; Colonel Sir Robert Jones, C.B., F.R.C.S.; and Lieutenant-Colonel Sir Harold J. Stiles, F.R.C.S. Sir Bertrand Dawson, who is physician to the London Hospital, is a consulting physician with the British Expeditionary Force in France. Sir Berkeley Moynihan, who is surgeon to the Leeds Infirmary, is consulting surgeon to the Northern Command. Sir Robert Jones is the Inspector of Military Orthopaedics, and Sir Harold Stiles of Edinburgh is Assistant Inspector of Military Orthopaedics for Scotland and was a member of the commission of inquiry in France. Colonel Horrocks, who was a member of the old board, again serves on the new board as sanitary expert. The secretary is Mr. A. T. Gann, who was the secretary of the old board. It will be observed that the new board does not contain, as did its predecessor, representatives of the India Office and of the directorates of military operations and of fortifications and works.

## DIGESTIBILITY OF BREAD.

THE report (3206), completed on March 11th, of the Food (War) Committee of the Royal Society on the digestibility of bread, has been issued this week. Some of the conclusions of most general interest were mentioned by Professor F. G. Hopkins in his lecture at University College, reported in our columns on February 2nd, p. 157. The questions the Committee set itself to answer were: (1) What gain, if any, in food value to the nation would accrue from a rise in the milling standard from 80 to 90 per cent., and whether the dilution of wheat flour with other cereals modified the food value of the bread? (2) What would be the effect on the health of the population of the consumption of such breads? and (3) How far would such breads prove acceptable to the population in general? The first set of experiments were made with undiluted wheat flour, extracted to 80 and to 90 per cent., on three groups of individuals—in Cambridge, Glasgow, and London; and the analytical work was done in the biochemical department of the University of Cambridge and in the Physiological Laboratories of the universities of Glasgow and London. The diet consisted of 800 grams of bread with butter, cheese, minced or potted meat, fruit jelly, milk and sugar, tea or coffee, and in one case beer was taken as a beverage. The dietary yielded about 3,680 calories a day. The effects

were remarkably uniform in the different individuals. During the use of bread made from the 80 per cent. flour there was extracted for the purposes of nutrition 96.1 per cent. of the energy contained in the diet; when bread made from 90 per cent. flour was used 94.5 per cent. was extracted. The loss of energy with the second bread was greater (5.5 per cent.) than with the first (3.86 per cent.); it is considered that the secretions of the gut contributed largely to this. The faeces with the 90 per cent. bread were more bulky, and the coarser particles of this bread produced a greater stimulation of the secretion of the gut. The increase in the bulk of the evacuation is considered not in itself an evil, and in the case of many individuals even an advantage. As to the nitrogenous constituents, it was found that the average digestibility was 89.4 per cent. in the case of bread made from flour extracted to 80 per cent., and 87.3 per cent. in that extracted to 90 per cent. In most of the cases there was a slight gain in body weight with both breads. The reply to the economic question is founded on the fact that a greater proportion of the energy of the grain is available for human consumption when flour is milled at the 90 per cent. scale than on the 80 per cent. scale. The increase was so considerable that it would extend the cereal supply of energy for the country for more than a month. Against this is to be set the loss of protein in the offal as food for pigs, but an allowance is made for this. Another set of experiments were made with bread made from flour consisting of four-fifths wheat extracted at 80 per cent., and one-fifth maize. In this series the original group of ten adults and two youths was increased by two boys and two young children, and a man considerably older than any of the original subjects. At first the flavour of the maize was commented on, and there was in some cases disturbance of digestion, attended sometimes with diarrhoea, but more often with constipation. These symptoms passed off. The general conclusion is that the bread made with the addition of maize flour was as digestible as bread made from the same wheaten flour without that mixture; it was well digested by children even when eaten in proportionately large quantities. The addition of maize made practically no difference in the utilization of energy and nitrogen. The report also contains observations made at a canteen on the dietetic effect and on the palatability of bread made from flour containing four-fifths of wheat extracted to 90 per cent., and one-fifth other permitted cereals. The cereals used were 10 per cent. barley, made up to 20 per cent. with maize and rice, or rice alone. This bread was consumed for two months by 20 men, 9 women, and 2 children. It was also taken for a month by 12 individuals—9 men, a woman, and 2 children. In no instance did it cause digestive trouble, and in certain cases the health seemed to improve. All considered the bread palatable, no one became tired of it, and the subjects of the experiment at its end drew up a memorial expressing their appreciation of the whole-meal bread, stating that they derived great benefit from its use and asking that a further supply should be obtained. A few observations were also made with bread made in the same proportions as in the factory experiments on patients in two sanatoriums for consumption—one for males and the other for females. The results were similar in the two sexes. Of 10 cases in the early stage 9 gained weight and 1 showed no change. Of 6 cases in the intermediate stage 4 gained and 1 lost weight, and in 1 the weight remained unchanged. Of 9 cases in the advanced stage, 6 gained and 3 lost weight. No evidence of digestive disturbance was noticed. All the patients preferred the special bread, with the exception of two men who said they had no preference and three who preferred ordinary bread. Dr. Robert Hutchison, in his paper on the medical aspects of the food problem, points out (p. 426) some practical conclusions to be associated with these scientific investigations.

## THE PROBLEMS OF RADIOACTIVITY.

IN the first Silvanus Thompson Memorial Lecture, delivered before the Röntgen Society on April 9th, Sir Ernest Rutherford, F.R.S., reviewed the various lines of scientific investigation opened up as a result of the discovery of $x$ rays. In a tribute to the first President of the Society, in whose honour the lectureship was instituted, he mentioned that on the morning that the late Silvanus Thompson read of Röntgen's discovery he set to work, and by nightfall had succeeded in producing what was probably the first $x$-ray photograph taken in this country. The outbreak of war, Professor Rutherford said, had caused an almost complete stoppage in the great tide of advance in pure science, but the lull afforded a suitable opportunity for looking back with some degree of perspective over the ground covered during the last twenty years. Undoubtedly the discovery of this new type of radiation marked the beginning of an epoch in physical science and had brought about a revolution in ideas of the nature of matter and electricity almost as marked as that produced in biology by the theory of evolution. The two decades from 1895 to 1915 had been a period of pioneer advance over a new and fertile territory, with the almost daily discovery of interesting facts and the gradual unfolding of fundamental ideas. The directions of advance which had been stimulated by the discovery of $x$ rays included investigation on the ionization of gases, electrons, the diffraction of $x$ rays by crystals, and, most important of all, the phenomena of radioactivity, which was an even more direct consequence of the discovery of $x$ rays than the work on the electron. The sequence of changes in uranium, radium, thorium, and actinium had now been followed out, not indeed completely, but in the main part. No doubt there would still be in the future considerable developments as the result of investigations of the multiple transformations of the atom, but as a whole, apart from a few outstanding difficulties, like the origin of actinium, the transformation of radioactive bodies was fairly well understood. A fundamental discovery, which had been completely verified just before the investigation was broken off by the war, was that certain radioactive elements were inseparable from one another—mesothorium and radium, for example—and this opened up a conception which must of necessity exercise a profound influence on all work on atomic weights, and lead to a close examination as to whether any of the ordinary elements were a mixture of "isotopes." Professor Rutherford went on to refer to the titanic violence of the explosion in the radioactive atom, shown by the expulsion of $\alpha$ particles at great speed and the ejection of electrons with nearly the velocity of light, accompanied by intense $x$ rays of much greater penetrating power than any that could be excited by an $x$-ray tube. He believed that there was very little hope at present of obtaining tubes which could compete with radium or thorium in providing a source of $x$ rays of very short wave length (and accordingly of great penetrating power). The $\gamma$ rays of radioactive substances had proved to be of much shorter wave length than was previously supposed.

## THE VALUE OF THE WASSERMANN REACTION.

WHEN the complement deviation test devised by Bordet was applied to syphilis by Wassermann, Neisser, and Bruck it was received with enthusiasm as a method which would remove all difficulties in the diagnosis of this disease. Unfortunately this contributed to the exaltation of laboratory diagnosis at the expense of clinical experience—a state of affairs which persisted even after it was shown that the reaction was not a true antigen-antibody phenomenon, that it was not absolutely specific, that it was not always obtained in cases with clinical evidence of syphilis, and that it did not necessarily prove that the lesion under consideration was syphilitic. The Wassermann reaction, like other laboratory tests, is a valuable aid to the clinician, but a diagnosis based on the

evidence of this reaction alone is open to many sources of error. Some instances will be found in a memorandum on the subject at p. 427. A comparison of the *post-mortem* findings, with the results of the Wassermann reaction during life, carried out on 331 cases at the Bellevue Hospital, New York, by Symmers, Darlington, and Bittman,[1] is of interest. In 204 cases the results corresponded, one or both antigens (cholesterinized and alcoholic) giving a negative reaction, and no signs of syphilis being found at necropsy. In the remaining cases, however, the reaction was positive in about 30 per cent. in which no *post-mortem* signs of syphilis were found, and negative in 31 to 56 per cent. (depending on the antigen used) with characteristic *post-mortem* signs of syphilis. In more than half of the latter cases the lesions are described as active, the remainder being indolent or healed. The value of these results is diminished by the fact that naked-eye changes alone were depended upon, no microscopic examinations being made. It is quite possible for syphilis to be present without changes visible to the naked eye. The converse category of cases, in which the reaction was negative during life, but signs of syphilis were found after death, carries more weight; but here again the results are incomplete, for the period that elapsed between the Wassermann tests and the deaths is not stated, nor is the cause of the deaths stated. Owing to these omissions, the results of this research cannot be accepted as conclusive, although it indicates that syphilis may be found after death where the Wassermann reaction was negative during life.

### THE AMERICAN MEDICAL RESERVE CORPS.

SUNDAY last (April 7th) was the first anniversary of America's entry into the conflict, and the official statement put out as to what has been accomplished in the year contains a number of interesting figures. A year ago the army numbered 212,000; it now numbers 1,650,000. The navy's strength a year ago was 82,700; to-day it is 351,000. The number of medical men who have passed through the army medical training schools is 6,000, which is at the rate of about 4.2 per 1,000 newly enlisted men. The number of medical officers in the navy is 1,675, which is at the rate of 4.8 per 1,000. We cannot fail to admire the manner in which members of the medical profession in the United States have set themselves with enthusiasm to learn their new specialty of military medical practice and administration. We gave some account last November of the three large training camps which were then in full swing. Their number has been increased, and recently in one camp in Georgia there were 1,500 doctors, and the energy they showed in the work was very satisfactory. In addition to instruction in purely military duties, refresher courses in all branches of medicine and surgery specially applicable to military life are given. The course through which each cadet officer passes lasts three months, and he is at work for about eight hours a day. During the first month he learns the ordinary work of the enlisted man of the Medical Department, so that he may be fitted for duty as an instructor; the second month is given to the special duties of medical officers as such, and the third to instruction in work in the field, such as the conduct of ambulance companies and field hospitals. In addition selected officers are sent for special training to laboratories for instruction in bacteriology and *x*-ray work.

### FATS AND OILS IN B.P. PREPARATIONS.

THE General Medical Council has now announced the alterations and amendments to the *British Pharmacopoeia* 1914, which, as mentioned three weeks ago, the President was authorized to make in consultation with the Pharmacopoeia Committee in response to representations from the Food Controller and the Home Office Committee on Drug Supply with regard to the necessity for discontinuing the use of various edible fats and oils in the official preparations. The following preparations are withdrawn until further notice: Linimentum camphorae, linimentum chloroformi, linimentum hydrargyri, linimentum terebinthinae aceticum, liquor cresol saponatus. In the United Kingdom certain specified substitutes for prepared lard and prepared suet may be employed in making official preparations; arachis (pea-nut) oil or sesame oil may be substituted for olive oil in official liniments, ointments, plasters, and soaps; and the use of the modified castor oil of commerce commonly known as "neutralized seconds castor oil" is permitted in making the official preparations for which castor-oil is directed to be used.

[1] *Journ. Amer. Med. Assoc.*, February 2nd, 1918.

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WE are glad to learn that Lieut.-General Sir Arthur Sloggett, D.G., A.M.S., has received news that his only son, Lieut.-Colonel A. J. H. Sloggett, D.S.O., Rifle Brigade, who had been presumed killed, is alive and a prisoner at Karlsruhe. Colonel Sloggett was in command of a battalion of the Rifle Brigade which on March 21st was known to have been carrying on a desperate fight in holding up a German division, and had been reported missing.

# Medical Notes in Parliament.

### Military Service Bill.

*Premier's Review of the Present Battle.—The New Proposals for more Man Power.—Provisions Affecting Medical Men.*

MR. LLOYD GEORGE on April 9th introduced the new (third) Military Service Bill in the House of Commons with a grave and compendious statement of the situation.

He devoted a large part of his speech to a review of the war events in France during the past fortnight. At the beginning of the German great offensive the combatant strength of the whole of the German army on the Western front was, he said, approximately equal, but not quite, to the total combatant strength of the allies. In several respects the Germans were inferior, but they had several important advantages. One was the initiative, which gave a large margin to surprise, in spite of our superiority in the air. They had the very great advantage, further, of having a united command. Incidentally, too, they had an important advantage in the weather. It was dry and misty. Thus the attack succeeded where in ordinary spring conditions the ground would have been almost impossible; the warmth increased the mist, and thus they were able in some parts to come within a few yards of our lines before their approach became known. After a eulogy of the splendid services of the French reserves, and after a warm tribute to the valour of our army, Mr. Lloyd George referred to the measures adopted by the Cabinet to meet the emergency. No such large numbers of men had ever before crossed the Channel in so short a time. The Ministry of Munitions had replaced lost guns and ammunition, and still had a very substantial reserve. The number of our aircraft, too, was greater now than it was before the battle. Secondly, President Wilson without the smallest hesitation consented that the fighting strength of the American army should be immediately brought to bear on this struggle. Thirdly, the Premier called attention to the decision taken to secure unity of command—a decision which he assured the House had the fullest concurrence of all concerned.

The battle proved that the enemy had definitely decided to seek a military decision this year. There was still seven or eight months during which the fighting would continue, and everything depended upon keeping our strength to the end. With American aid we could do it, but even with that we could not feel secure unless the further sacrifices the Government proposed were made. The Premier acknowledged frankly the limitations—for use in the army—of the remaining man power in this country. He recognized also that the claims of the navy and of shipping must stand first, and that we had to supply coal largely to the allies as well as steel. There was still, however, a reserve of men to be obtained without impairing the striking power of the country for war.

During the first quarter of this year there had already been raised for the armed forces more than that quarter's proportion of the original number of men estimated as the minimum required for the present year. There had been also a very strict comb out of some of the essential industries. Very large levies had been taken from the munition works; they would amount, he thought, to something like 100,000 Grade 1 men. That had been done this year. A call for 50,000 had been made on the coal industry and these men were being rapidly recruited; a call for another 50,000 men was to be made from this industry. It was proposed that no fit men below the age of 25 should be retained in the Civil Services; that would be a clean cut. Beyond that there would be a comb out. The clean cut was also to be applied to other industries in another way. Under the Act passed in January this year orders would be issued cancelling all occupational exceptions by age blocks in specified occupations. That would be a clean cut. The first of these orders was being laid on the table that day and other orders would follow. As it was necessary not only to have men but to have them quickly, the Government had shortened the length of the calling up notice from fourteen days to seven, and had authorized the serving of the notice by whatever method was most convenient. It might be necessary even to curtail right to appeal on medical grounds, but for the moment it was not proposed to do this. There had been a great many frivolous appeals which had wasted much time, and if that went on it would be absolutely necessary in the interests of the country that the right to appeal should be curtailed in this respect. There was another consideration: the strain upon the medical profession had been great already. They were very short of medical men, and they might be driven to take the course he mentioned for the hard necessities of the case.

Then the Premier brought the House to the new proposals actually embodied in the new bill. The first was to raise the military age to 50, with powers to raise it in special specified cases to 55. That last provision was to apply only where men with special qualifications were needed. For instance, it might be necessary to do this in the case of medical men. The raising of the age to 50 did not mean that men between 42 and 50 were necessarily to be put into the fighting line. It might be that there were men of that age just as fit as men of 55, but that would be the exception. There were a good many services in the army, however, which did not require the best physical material, and it would be very helpful to get men of this age in order to release younger and fitter men to enter the fighting line. They had also to prepare for home defence, so as to be able to release men from this country, and to fill their places by men between 42 and 50. The proportion of men from 42 to 50 that it was expected would be available for the line was not very high—something like 7 per cent. Only a small percentage of the men within the years named would be likely to come under the provisions of the Bill.

The next consideration was the question of exemptions. Under the Act passed this year the Minister of National Service already had power to cancel certificates granted on occupational grounds. It was proposed to make free use of this power, and several of these exemptions would be cancelled (under power already conferred on the National Service Ministry) by means of proclamation. This was another means of arriving at the clean cut. Any existing exemptions granted to such men would be superseded, and the men would be taken or left on medical grounds only. The provision would not be used to set aside pledges given to discharged soldiers. It was further proposed in the bill to take power by Order in Council both to reconstitute the tribunals and to regulate the areas in which they should work; to standardize the grounds of exemption and limit the rights of appeal. The areas within which tribunals might act would be reconsidered and in some cases adjusted. Local tribunals, like the appeal tribunals, would become nominated bodies and would be reduced in size, but existing members of tribunals who had rendered admirable service would be retained, and the tribunal staff and officers would be preserved. Touching the inclusion of ministers of religion in the bill for non-combatant purposes, Mr. Lloyd George said there was a shortage of fit men for the service of the sick and wounded, and he thought that ministers would be able especially to render services of this kind in the battlefield.

Finally, the Prime Minister stated the reasons for including Ireland in the scope of the bill. The point he made most emphatically was that it would be indefensible to ask young men of 18½ years of age and men up to 50 in England, Scotland, and Wales to fight whilst young men of 20 to 25 in Ireland were under no obligation to take up arms for the common cause. But as there was no machinery in existence for applying the measure to Ireland and no register had been completed, it might take some weeks before actual enrolment began. Meanwhile it was intended to ask Parliament to pass a measure for self-government in Ireland. He wished it to be understood, however, that each question must be taken on its merits. While speaking on this matter Mr. Lloyd George was challenged by Mr. Devlin as to whether he was aware of the recommendation of the Irish Convention on this subject. The point of Mr. Devlin's interruption, which he brought out later, was that a Subcommittee of the Convention, consisting of the Duke of Abercorn, Lord Desart, Mr. Powell (three Unionists), and Captain Gwynn and Captain Doran (two Nationalist members who were soldier members of the Convention), had reported that it would be impracticable to enforce conscription in Ireland except with the approval of the Irish Parliament, and that the Convention had adopted this view as part of their report. Mr. Lloyd George said that he understood that the Convention reported by a majority, and the Government would have to accept responsibility of submitting to Parliament, with such guidance as the Convention report afforded, such proposals as it thought could be carried without violent controversy. In the subsequent debate Mr. Asquith spoke very gravely of the military situation, but with confidence in the army and the country's patriotism. He suggested that with the object of getting legislation in a form that would meet reasonable objections, a little more time than had been suggested should be given for the consideration of the bill.

Irish Nationalist members spoke in hostility to the inclusion of Ireland in the measure. Sir Edward Carson, on the other hand, expressed his pleasure that Ireland would be called upon to give her due share to the military forces. The Nationalists challenged division on the first reading, which was carried by 299 votes to 80, a minority almost exclusively composed of Nationalists.

In the second reading debate on April 10th Sir Donald Maclean, Chairman of the London Appeal Tribunal, gave the reasons why he and his colleagues held that it would not pay to raise the age beyond 48. The men between 39 and 41 who had come up lately, had been mostly subjected to grading under the new medical system. In the great majority of cases men graded A or Grade 2, had, on this medical test, been brought down to Grade 3. He assumed it was not intended to lower the medical standard. On such experience his belief was that not more than 3 per cent. of the men above 48 would have military value. This would mean a fresh avalanche of Grade 3 men, mostly unfit. Soldiers resented more the entrance of the unfit into the army, and commercial interests would suffer seriously without advantage to the country. Then, too, having regard to the real shortage of doctors, it should be remembered that this type of men would carry a much larger percentage of sickness and add to their difficulties. The Minister for National Service would agree that the result of the experience for the last two years was to show that sickness casualties among men between 35 and 41 were two and a half times greater than the casualties of men between 35 and 41. The businesses of these men would be paralysed to get slight returns. In the opinion of himself and his colleagues to raise the age so high would mean adding to the pension list materially, ruining physically thousands of men, and burdening the army unnecessarily. Later in the evening Mr. Asquith supported this view. He thought it undesirable also that there should be a contingent power for the executive without any reference to Parliament to raise the military age to 56. It would place many business men in great uncertainty. Mr. Bonar Law in his reply announced that the decision of the Government to apply conscription to Ireland was definite. He promised careful consideration to the question of the age limit as regards the high years. The test of the War Cabinet would be a necessity. Mr. Law emphasized the gravity of the situation. Sir Auckland Geddes, in winding up the debate for the Government, said that Clause 3, whereby it was intended to make clean cuts, was really the most important part of the bill. It was necessary to have all the resources which under the bill it was proposed to use.

The second reading was carried by 323 votes to 100, the minority being mainly composed of Nationalist members.

The first clause of the bill fixes the age of compulsory military service at from 18 to 51, subject to provisos as follows:

(*a*) If it appears to His Majesty at any time that it is necessary so to do for the defence of the realm, His Majesty may by Order in Council declare that the foregoing provision shall, as respects men generally, or as respects any class of men, have effect, as from a date to be specified in the Order, as if any age specified in

the Order not exceeding fifty-six years were therein substituted for the age of fifty-one years; and

(*b*) As respects any person being a duly qualified medical practitioner, the foregoing provision shall have effect as if the age of fifty-six years were therein substituted for the age of fifty-one years.

Clause 2 gives power to declare by proclamation that a national emergency has arisen, and that any certificates of exemption to any class or body of men shall cease to have effect. Clause 4 provides for the constitution of tribunals and for the establishment of special tribunals, committees, or panels for dealing with particular classes of cases, for regulating and limiting the making of applications to such tribunals, and for determining the grounds on which applications, or any particular classes of applications, may be made, and the right of appeal.

# THE WAR.

## THE MEDICAL SERVICE IN THE FIFTH ARMY.

THE object of the great German attack on March 21st and following days seems to have been to break through the point of junction between the extreme right, or southern end of the British forces and the extreme left, or north, of the French. The course of the battle from that date to March 26th can now be traced, and in the following brief account we follow an admirable summary by Commandant de Civrieux.[1]

### *General Character of the Retreat.*

The British 3rd and 5th Armies were on a line from the Scarpe, the river which runs due west from Arras towards Douai, on the north and the Oise, on which La Fère and Noyon are situated, on the south. The country between is traversed about midway by the River Somme; from Peronne to Amiens the Somme runs nearly due west, but in its course from St. Quentin to Peronne it makes a deep bend south through Ham. The junction between the 5th Army and the French was a point near La Fère, just north of the Somme. Opposed to them from north to south were the armies commanded by Prince Rupprecht of Bavaria, the Crown Prince, and Generals von Below, von Marwitz, von Kathen, and von Gontard. The attack was on a line of about 70 kilometres (about 43 miles). The preliminary bombardment began at 2 a.m. on March 21st; the German infantry attacked at 8 a.m. on the same day by massed waves. On the 21st and 22nd the British 5th army fell back to the line Peronne–Ham; the 3rd army maintained its position in great part, but on March 23rd conformed on its right to the retreat of the 5th army, retiring to the line Bapaume–Peronne. It was on this day that the French took over the right of the British 5th army. On March 24th the enemy got across the Somme to the south and north of Peronne, and the 5th army retired to the line Bapaume–Combles–Maurepas, but in the evening forced the enemy back over the Somme. Meanwhile the French, to the south, had generally kept their ground. On March 25th the Germans reached Nesle, Peronne, and Bapaume, and the 5th army retired again, the Germans continuing to push towards Amiens by the roads Bapaume–Albert, Nesle–Chaulnes. The French, who had stood north-east of Noyon, evacuated the town on that night; fighting in this region continued to be severe, but northward the British line was for the time left comparatively quiet. The general effect of the five days' fighting had been to force the British 5th army westward with an inclination north, with the result that a great part of its back areas was lost, and it is in such areas in the second line that casualty clearing stations and the machinery for the evacuation of the wounded from them to the base is established.

### *The Withdrawal of the C.C.S.*

Further details which reach us this week bear out very closely the information we were able to give in our last issue with regard to the medical services, more particularly the forward casualty clearing stations, during the rapid retirement at the end of last month. The German attack was expected, and the more advanced clearing stations were moved back at once without much difficulty, but as the other medical units arranged in series at varying distances behind became threatened under the rapid and sustained advance of the enemy, the difficulties of evacuating the wounded became increasingly great. One after another the clearing stations had to be evacuated; sometimes a unit, after opening up in a new site, was obliged to clear its patients at the end of forty-eight or even twenty-four hours, and then fall back itself, losing each time more of its equipment. Occasionally the last cases were got away whilst the infantry were preparing to make a stand in the clearing station grounds, with the field guns firing over their heads from new positions behind. In one or two instances a few desperate cases were left behind under the care of a medical officer and some orderlies, but even these were eventually moved to safety. Under such conditions deliberate surgery such as is practised when behind a more or less stationary line was out of the question; all that could be done was to dress and feed the patients and perform a few urgent operations, evacuation meanwhile proceeding by ambulance train, or car, and fresh cases accumulating in large numbers from the field ambulances. At some points the most that could be done was to establish an improvised collecting station beside the railway and load the patients on trains as they came up. There were moments when it seemed that it would be impossible to get all the wounded away, but in every instance this was accomplished successfully, though sometimes the lightest walking cases, through lack of transport, had to be marched to the rear. Notwithstanding every sort of difficulty no officer, sister, or man of the clearing station personnel was lost, nor was a single patient left behind by these units to fall into the enemy's hands.

### *The Field Ambulances.*

More remarkable even than this was the fact that while the clearing stations were moving backwards the field ambulances were able to evacuate cases in a steady stream and without hitch all through; it is believed that no patients even in the field ambulances were taken prisoner during the retreat.

Such results leave no doubt as to the organizing ability and resourcefulness of those in charge of the medical arrangements throughout a most trying and anxious period. Although the battle went hard for our troops in a military sense, the medical services seem to have come magnificently through an ordeal which can only be compared with the retreat from Mons.

### *Sisters and Nurses.*

The gallantry of the sisters during the evacuation and removal of the forward clearing stations was alluded to last week. One group of nurses, we learn, stood quietly beside the railway line whilst their station was being shelled, waiting for a train which might or might not succeed in reaching them; yet next day they were at work in a new place as though nothing had happened. The officers and men of the R.A.M.C. showed the courage, coolness, and devotion which were expected of them during such critical times.

[1] *L'Illustration*, March 30th.

## WAR OFFICE STATEMENT.

THE Secretary to the War Office has issued the following statement:

In the recent retirement on the Western front a number of medical units, such as casualty clearing stations, fell into the hands of the enemy. All the medical and nursing personnel of these units, and the patients, were safely evacuated, none being captured. The equipment and material were replaced immediately, and large reserve supplies have, in addition, been sent to France. All deficiencies in personnel, officers, nurses, and other ranks have been made good.

The Canadian and Australian medical authorities have generously come to our help by lending us medical officers and nurses.

It is regretted that in the process of evacuating casualty clearing stations a number of casualties occurred among the medical and nursing personnel. This was inevitable, as the units had to be cleared out at short notice, under, in many cases, heavy fire. A surgical team which had generously been lent to one of our casualty clearing stations by a Philadelphia hospital was heavily bombed, and two officers and one nurse were wounded.

The consulting surgeons of the administrative medical staff in France report that the care and attention which the wounded are receiving leaves nothing to be desired.

# CASUALTIES IN THE MEDICAL SERVICES.

## ROYAL NAVY.

*Wounded.*

Surgeon J. J. Keatley, R.N.
Surgeon T. D. McEwan, R.N.V.R.
Surgeon Probationer F. Hussey-Anderson, R.N.V.R.

## ARMY.

*Killed in Action.*

Captain J. W. Anderson, M.C., R.A.M.C.(T.F.).

Captain Jonas William Anderson, M.C., R.A.M.C.(T.F.), was killed in action during the recent fighting on the Somme. He was the son of Mr. D. C. Anderson, of Southport, and was educated at Liverpool University where he graduated M.B. and Ch.B.Vict. in 1898. After acting as house-surgeon of the Liverpool Royal Infirmary, and of Southport Infirmary, and as surgeon of H.M. transport *Orotava* during the South African war (medal), he went into practice at Llanfair Caercinion, Montgomeryshire. He took a commission as lieutenant and medical officer in the 4th Territorial (Denbighshire) Battalion of the Royal Welsh Fusiliers on March 24th, 1906, was called out for service on September 3rd, 1914, and promoted to captain after six months' service. He received the Military Cross on January 14th, 1916.

Captain H. W. Batchelor, R.A.M.C.

Captain Henry Washington Batchelor, R.A.M.C., was killed in action on March 24th, aged 30. He was the eldest son of the late Dr. H. T. Batchelor, of Queenstown, South Africa, and was educated at the London Hospital, taking the diplomas of M.R.C.S. and L.R.C.P.Lond. in 1912. After filling the posts of clinical assistant in the cardiac department at the London Hospital and of assistant house-surgeon at the Poplar Hospital for Accidents, he took a temporary commission as lieutenant in the R.A.M.C. on August 7th, 1914, three days after war was declared, and was promoted to captain after a year's service.

Captain W. Brownlie, R.A.M.C.

Captain William Brownlie, R.A.M.C., was killed in action on March 25th. He was the youngest son of Mr. William Brownlie, of Invercargill, New Zealand, was educated at the Universities of New Zealand and Edinburgh, graduating M.A. and B.Sc. at the former, and M.B. and Ch.B. at the latter. He held a temporary commission in the R.A.M.C.

Captain D. C. Crole, R.A.M.C.

Captain David Clement Crole, R.A.M.C., was killed in action on March 23rd, aged 33. He was the only surviving son of the late Dr. Angus Fletcher Crole of Leven, Fife, and was educated at Edinburgh University, where he graduated M.B. and Ch.B. in 1905. He held a temporary commission in the R.A.M.C. and was attached to the Hussars when killed.

Captain E. C. Cunnington, R.A.M.C.

Captain Edward Charles Cunnington, R.A.M.C., was killed on March 23rd, aged 27. He was the only child of Captain B. H. Cunnington, Wiltshire Regiment, and was educated at Cambridge and at St. Bartholomew's Hospital, took the M.R.C.S. and L.R.C.P.Lond. in 1915, and held a temporary commission in the R.A.M.C.

Captain E. H. Griffin, D.S.O., M.C., R.A.M.C.

Captain Ernest Harrison Griffin, D.S.O., M.C., R.A.M.C., was killed in action on March 21st. He was the only surviving son of the late Mr. John Griffin of Walsall, and was educated at Cambridge, where he graduated B.A. in 1898, and at St. Bartholomew's Hospital, taking the diploma of L.S.A. in 1902. He subsequently took the diploma in tropical medicine and hygiene at Cambridge in 1914. He had filled the posts of clinical assistant at the Samaritan Free Hospital, of assistant physician and pathologist at Camberwell House Asylum, and of surgeon to the Venezuela Goldfields; and served as surgeon to the British Red Crescent Society in Tripoli in the Turco-Italian war. He took a temporary commission as lieutenant in the R.A.M.C. on August 16th, 1916, and was promoted to captain after a year's service. He had been mentioned in dispatches, received the Military Cross on August 25th, 1916, and the D.S.O. on November 26th, 1917; and also held the Venezuelan Order of the Liberator.

Captain S. E. McClatchey, R.A.M.C.

Captain Samuel Edward McClatchey, R.A.M.C., was killed in action on March 25th. He was educated at Victoria University, Manchester, where he graduated M.B. and Ch.B. in 1911. After acting as junior house-surgeon at Preston Royal Infirmary, he went into practice at Buxton. He took a temporary commission as lieutenant in the R.A.M.C. on September 10th, 1914, was promoted to captain after a year's service, and was attached to the Welsh Regiment when killed.

Captain C. H. G. Philp, R.A.M.C.

Captain Claude Hastings George Philp, R.A.M.C., was killed in action on March 26th, aged 32. He was educated at Cambridge, where he graduated B.A. in 1907 and M.B. and B.C. in 1912, and at St. Thomas's Hospital. After acting as assistant casualty officer at St. Thomas's and as resident medical officer of Herefordshire General Hospital, he went into practice at Hereford, where he held the appointment of honorary anaesthetist to that hospital. He joined the R.A.M.C. as a temporary lieutenant in 1916, and was promoted to captain after a year's service. He was attached to the Manchester Regiment when killed.

*Died of Wounds.*

Captain F. Simpson, R.A.M.C.

Captain Frederic Simpson, R.A.M.C., died at Templeton House, Roehampton, on March 31st, of wounds received on January 1st, aged 33. He was the second son of Mr. Sidney Simpson of Erith. He took a temporary commission in the R.A.M.C. in the middle of 1916, and was promoted to captain after a year's service. He received his medical education at Charing Cross Medical School, and took the diploma of L.M.S.S.A., and immediately after received a commission in the R.A.M.C.

Captain H. H. Taylor, R.A.M.C.

Captain Herbert Hampden Taylor, R.A.M.C., died of wounds in a Canadian stationary hospital on April 3rd, aged 35. He was the third son of the late Mr. Robert Taylor, solicitor, of Bedford Row, and was educated at St. Mary's Hospital, taking the diplomas of M.R.C.S. and L.R.C.P.Lond. in 1907, and at Cambridge, where he graduated M.B. and B.C. in 1908; after which he acted as house-physician and house-surgeon at St. Mary's Hospital, and as assistant medical officer at St. George's Infirmary. He took a temporary commission as lieutenant in the R.A.M.C. on April 24th, 1915, and was promoted to captain after a year's service.

Captain G. H. D. Webb, R.A.M.C.(T.F.).

Captain George Harvey Duder Webb, R.A.M.C.(T.F.), died of wounds on March 29th. He was the second son of Mr. J. Collier Webb, and was educated at University College Hospital, London, taking the diplomas of M.R.C.S. and L.R.C.P.Lond. in 1914. He took a commission as lieutenant in the 3rd London General Hospital on August 20th, 1914, and was promoted to captain after a year's service.

*Accidentally Killed.*

Captain T. L. Enright, R.A.M.C.

Captain Thomas Louis Enright, R.A.M.C., was accidentally killed recently at Salonica. He was the third son of Mr. James Enright, of Listowel, and took the diplomas of L.R.C.S. and L.R.C.P.Irel. in 1914. He joined the R.A.M.C. as a temporary lieutenant on February 1st, 1915, and was promoted to captain on completion of a year's service.

*Died on Service.*

Lieut.-Colonel R. Bird, C.I.E., M.V.O., I.M.S.

Lieut.-Colonel Robert Bird, Bengal Medical Service, died at Wellington, Nilgiri Hills, Southern India, on March 30th, aged 51. He was born on December 4th, 1866, educated at St. Bartholomew's Hospital, and took the diplomas of M.R.C.S. and L.R.C.P.Lond. in 1888, the M.B. and B.S.Lond. in the same year, with honours in physiology, materia medica, and organic chemistry at the intermediate examination, the M.D. in 1889 and the M.S. in 1891, and also the F.R.C.S. and the D.P.H.Camb. in 1891. Entering the I.M.S. as surgeon on July 28th, 1891, he

became major on July 28th, 1903, and lieutenant-colonel on July 28th, 1911. After three years in the army he was posted in September, 1894, to civil employ in Bengal, where he spent the rest of his service. From March, 1895, to September, 1903, he was resident medical officer of the Calcutta Medical College Hospital, and in May, 1908, was appointed professor of surgery. Some fourteen years ago he was deputed on special duty to Kabul to treat the Amir of Afghanistan for an injury, and in the winter of 1911-12 was on special duty on the staff of the King-Emperor during his visit to India for the Coronation Durbar. He received the C.I.E. on January 1st, 1905, and the M.V.O. on January 4th, 1912.

*Wounded.*

Colonel A. D. Sharp, C.B., C.M.G., R.A.M.C.(T.F.).
Lieut.-Colonel H. B. Fawcus, D.S.O., C.M.G., R.A.M.C.
Lieut.-Colonel J. McMillan, M.C., R.A.M.C.(T.F.).
Lieut.-Colonel R. T. C. Robertson, D.S.O., R.A.M.C.(S.R.).
Captain G. S. Clancy, R.A.M.C. (temporary).
Captain P. E. Earnshaw, Australian A.M.C.
Captain E. C. T. Emerson, R.A.M.C.(T.F.).
Captain H. L. G. Hughes, D.S.O., R.A.M.C. (temporary).
Captain J. W. Hunt, Canadian A.M.C.
Captain W. J. Knight, M.C., R.A.M.C. (temporary).
Captain W. F. Maclean, R.A.M.C.(S.R.).
Captain V. H. Mason, M.C., R.A.M.C. (temporary).
Captain S. A. W. Munro, R.A.M.C. (temporary).
Captain P. J. O'Shea, Australian A.M.C.
Captain F. E. L. Phillips, R.A.M.C. (temporary).
Captain R. N. Porritt, R.A.M.C. (temporary).
Captain H. E. S. Richards, R.A.M.C. (temporary).
Captain R. S. Ross, R.A.M.C. (temporary).
Captain T. J. Ryan, R.A.M.C. (temporary).
Captain L. M. Webber, R.A.M.C. (temporary).
Lieutenant H. Daw, R.A.M.C. (temporary).

*Missing.*

Major J. S. McConnachie, R.A.M.C.(T.F.).
Captain M. T. Ascough, M.C., R.A.M.C.(T.F.).
Captain T. E. H. Carr, R.A.M.C. (temporary).
Captain W. M. Christie, R.A.M.C. (temporary).
Captain P. P. Corbett, R.A.M.C.(S.R.).
Captain S. Cross, R.A.M.C. (temporary).
Captain C. E. P. Husband, R.A.M.C. (temporary).
Captain G. R. Lipp, R.A.M.C. (temporary).
Captain A. T. I. Macdonald, R.A.M.C. (temporary).
Captain D. Macnair, R.A.M.C.(T.F.).
Captain C. Mearns, R.A.M.C.(T.F.).
Captain E. J. Storer, R.A.M.C. (temporary).
Captain G. Torrance, R.A.M.C. (temporary).
Captain D. A. Wilson, R.A.M.C. (temporary).
Lieutenant W. H. Rawdon, R.A.M.C. (temporary).

DEATHS OF SONS OF MEDICAL MEN.

Barton, John Francis Sinclair, Sublieutenant R.N., youngest son of Dr. F. Alexander Barton, killed March 13th, aged 24.

Glendinning, James Graham, Second Lieutenant Monmouthshire Regiment, attached Royal Flying Corps, only son of Dr. Glendinning, late medical superintendent Monmouthshire Asylum, Abergavenny, killed in action in France on December 2nd, 1917, aged 20. He was educated at King Henry VIII's Grammar School, Abergavenny, and at Epsom College, where he keenly interested himself in sports, winning the MacFarlane Cup for his House in 1916 and the Blande prize. He was Head Prefect for his House, and had just begun medical studies when he joined the Monmouthshire Regiment in July, 1916.

Cummins, Thomas Coote, Second Lieutenant York and Lancs Regiment, only son of Dr. Wm. MacAlister Cummins, of Renishaw, Chesterfield, killed in action on March 25th, 1918, aged 19. He was educated at Chesterfield Grammar School, and King Edward VII School, Sheffield, and was about to enter Sheffield University when he was called to his military duties. He received his commission in September, 1917, and proceeded to France on November 4th, 1917.

Hall, Wilfred Rodenhurst, M.C., Lieutenant Suffolk Regiment, fourth and youngest son of Dr. H. S. W. Hall, of Hertford, killed March 27th, aged 20.

Haynes, John Eustace Tarleton, Second Lieutenant 1st Worcestershire Regiment, killed in action on March 23rd, only child of Dr. and Mrs. Sydney Haynes of Edgbaston, aged 19. He was educated at the West House School, Edgbaston, Berkhamsted, and Sandhurst, and got his commission in May, 1917. Both his grandfathers were medical practitioners.

Mackintosh, Ian Keith, Second Lieutenant Black Watch, only son of the late Dr. W. A. Mackintosh of Montrose, killed March 21st.

O'Keeffe, Marcus Manus, M.C., Captain Royal Field Artillery, only son of Major-General M. W. O'Keeffe, M.D., C.B., D.M.S. 4th Army, killed April 2nd, aged 21. He was educated at Cheltenham College, got his commission on February 10th, 1915, and gained the Military Cross in July, 1916.

Purdy, R. G., Major New Zealand Military Forces, was killed in action, together with his Brigadier-General, by the bursting of a shell. Major Purdy was the son of Colonel J. R. Purdy, M.B., C.M.Aberd., D.M.S. New Zealand Army, nephew of Colonel J. S. Purdy, commanding the Third Australian General Hospital, and a grandson of Captain Jobberns, of Aberdeen, an officer with a distinguished record in the Crimea and Indian Mutiny. He was educated at Wellington College, New Zealand, and entered the New Zealand Permanent Defence Force in 1912. He had received the Military Cross and bar, and the Croix de Guerre. He married shortly before leaving for the war, and his widow survives him.

Skrimshire, Herbert Eric, Second Lieutenant Royal Garrison Artillery, younger son of the late Dr. Skrimshire of Morpeth, died of wounds on March 29th, aged 27.

Willans, Alan James, Captain King's Royal Rifle Corps, youngest son of the late Dr. Willans of Much Hadham, Herts, killed on March 24th, aged 21.

MEDICAL STUDENT.

Scott, Harvey Alexander, Lieutenant Gordon Highlanders, son of the Rev. Thomas Harvey of Edinburgh, died of wounds at a casualty clearing station on March 29th, aged 21. He was educated at Daniel Stewart's College and at Edinburgh University, where he was a medical student before the war. He got his commission from the O.T.C. on January 8th, 1916, and had twice previously been wounded.

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*[We shall be indebted to relatives of those who are killed in action or die in the war for information which will enable us to make these notes as complete and accurate as possible.]*

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## HONOURS.

A SUPPLEMENT to the *London Gazette*, published on April 6th, contained statements of the services for which the decorations announced in the *Gazette* of November 26th, 1917 (BRITISH MEDICAL JOURNAL, December 1st, 1917, p. 738), were conferred. The following officers of the medical services received the awards indicated "for conspicuous gallantry and devotion to duty":

*Bar to the Distinguished Service Order.*

Major (temporary Lieut.-Colonel) Patrick John Hanafin, D.S.O., R.A.M.C.

For nine days he was continuously under heavy shell fire while supervising the evacuation of the wounded in the most adverse circumstances. Finally, although wounded in passing through a heavy barrage, he continued on duty until the last man had been brought in. The successful evacuation of the wounded was largely due to his gallant conduct.

Temporary Captain Robert McCowan Hill, D.S.O., R.A.M.C.

While on the way to battalion headquarters his party was caught in an enemy barrage, and four of them were wounded. He at once dressed their wounds on the spot in a most exposed position and under heavy fire. On arriving at the aid post he was informed that a whole machine-gun team were casualties in an advanced position. No stretcher-bearers were available, and he at once went forward and attended to them on the spot under heavy fire. He then returned and worked at his aid post under intense shelling, often attending to cases in the trench outside when the aid post was full. Casualties were being caused all round him, and he was wounded himself, but, though suffering severely, he remained at duty for sixteen hours until the battalion was relieved. He set a most inspiring example of courage and devotion to duty to all ranks.

*Distinguished Service Order.*

Major William Bannerman Craig, A.A.M.C.

After the aid post had been blown up during an attack, he attended the wounded and organized bearer parties in the open. Though wounded he persisted in his work until disabled by another wound.

Temporary Captain James Churchill Dunn, M.C., R.A.M.C.

He worked with untiring energy in the open in the front line, searching for and dressing the wounded and constantly exposing himself to machine-gun and rifle fire. His medical orderlies were both wounded, and the greater portion of his work was done without any assistance. He set a magnificent example to all of courage and devotion to duty under continuous heavy fire and enemy counter attacks.

Temporary Captain Ernest Harrison Griffin, M.C., R.A.M.C. (killed in action, March 21st).

He established his dressing station well forward during an attack, and went up to the front line through a storm of artillery and machine-gun fire utterly regardless of personal safety. He moved about in the open for thirty-six hours without food or rest, attending to the wounded, often leading parties of bearers through heavy barrages until every wounded man had been carried back. He remained behind after the battalion was relieved, still searching for wounded, under heavy fire, though he was several times badly shaken by the explosion of shells. He set a most inspiring example of courage and devotion to duty.

Major William Allan Hailes, A.A.M.C.

His example in attending to four wounded men in the open under heavy fire and conveying them to cover stimulated the stretcher-bearers to great efforts under most trying circumstances.

Major Harrie Bertie Lee, M.C., A.A.M.C.

He was in charge of the organization of bearer reliefs during an action, and hearing that the officer in charge of the forward bearer parties had been killed he at once went forward under heavy fire

and took charge. He located the new regimental aid posts forward of the former front line, and with absolute disregard of danger arranged for the evacuation of the wounded from these new posts through a heavy barrage. His quick grasp of the situation and prompt and courageous action were of inestimable value.

Major Kenneth MacCormick, C.A.M.C.

When in charge of the evacuation of the wounded during an action he remained at duty for forty-eight hours without rest, visiting the advanced posts, searching shell holes and bringing in many wounded. When one of his bearer posts was heavily shelled, with great coolness he got all the wounded away, staying behind himself until the last had left. He set a splendid example of courage and untiring energy.

Major Robert Maxwell McMaster, A.A.M.C.

He tended the wounded continuously for ten hours under shell fire. Several of his bearers were killed and wounded, and it was only with the greatest difficulty that he was able to save the wounded from being killed or buried alive.

Captain and Brevet Major Henry Forbes Panton, M.C., R.A.M.C.

The evacuation of casualties, amounting to 60 officers and 1,100 men, after an advance of 3,000 yards was most successfully carried out, chiefly owing to the initiative and sound judgement displayed by him. He spent twenty-four hours in the forward area, visiting every regimental aid post and sending back hourly reports until the battlefield was completely cleared of wounded.

*Bar to the Military Cross.*

Temporary Captain William Thomson Brown, M.C., R.A.M.C.

He acted as bearer officer during an action, and was continuously in the open under heavy fire of all kinds. Though several times blown up by shells he remained at work, and set a most inspiring example of courage and gallantry.

Temporary Lieutenant (temporary Captain) Henry Alphonsus Harbison, M.C., R.A.M.C.

He was in charge of divisional stretcher-bearers during several days' operations. For seventy-two hours he never slept, and was continually on the move under intense shell fire, establishing connexion with the regimental aid posts and leading and directing the bearers. The entire success of the evacuation of stretcher cases from the forward area was due to his magnificent example. His coolness, courage, and endurance had a wonderful influence on his bearers. He has rendered conspicuous and valuable service on many other occasions.

Temporary Captain Reginald Ralston Huxtable, M.C., R.A.M.C.

This officer worked for three days and nights under the most appalling conditions helping the wounded, being continually in the greatest danger. He finally collapsed on reaching camp.

Captain Charles Herbert Leedman, M.C., A.A.M.C.

He worked for four days in the open attending to the wounded, in the course of which he dressed 300 cases. Seven intense barrages were put down by the enemy, but he went on with his duties, showing a total disregard for danger. His courage, devotion to duty, and endurance greatly inspired all ranks, and undoubtedly saved many lives.

Captain George Reginald Edward Gray Mackay, M.C., R.A.M.C.

He personally supervised the evacuation of the wounded, making several journeys through a heavy barrage. On many previous occasions he has performed similar acts of gallantry.

Temporary Captain Charles Joseph O'Reilly, M.C., R.A.M.C.

He personally supervised the evacuation of wounded, passing and repassing through heavy barrage fire. When a neighbouring M.O. was killed, he attached himself to the battalion and dressed and supervised the evacuation of the wounded.

Captain Patrick Joseph Francis O'Shea, M.C., A.A.M.C.

He dressed the wounded in the open after the aid post had become congested, and organized stretcher parties under heavy fire. His resource and courage saved many lives. He afterwards went round the shell holes with a party of bearers, dressing and collecting the wounded with a fine disregard of personal danger.

Temporary Captain John Finlayson McGill Sloan, M.C., R.A.M.C.

He worked continuously for two days, dressing over 150 cases in the open under heavy fire, three or four of the wounded being hit by snipers. He showed a fine example of coolness and sense of duty.

Temporary Captain Gideon Walker, M.C., R.A.M.C.

He worked for twenty-four hours after an attack in an advanced area, getting in the wounded of two battalions, and remained in the line after his own battalion was relieved. He showed the greatest contempt of danger under heavy shell fire.

*(To be continued.)*

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The Sultan of Egypt has conferred the Order of the Nile (4th Class) upon Captains William Edward Marshall, M.C., and William Hubert Milligan, both of the R.A.M.C., for distinguished services rendered during the course of the campaign.

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The following are among the decorations conferred by the Allied Powers on officers and men of the British naval forces for distinguished services rendered during the war:

*Croix de Guerre* (conferred by the President of the French Republic): Surgeon Alfred G. Williams, R.N.

*Order of the Rising Sun, 4th Class* (conferred by the Emperor of Japan): Fleet Surgeon Samuel Conner, R.N.

*Order of the Redeemer—Commander* (conferred by the King of the Hellenes): Staff Surgeon Ernest D. Rutherford, R.N.

# England and Wales.

### Cerebro-spinal Fever in 1916.

The annual report of the Registrar-General for 1916 contains some statistics of the incidence of cerebro-spinal fever during that year. London and the South of England generally again suffered far more than the rest of the country as measured by the death-rates. The notification figures bring out very clearly the degree to which the disease specially affected the metropolitan area. The civil notifications from the county of London numbered 428, and from Croydon, West Ham, and East Ham 32. Two hundred more civil notifications came from Essex, Middlesex, Kent, and Surrey, making altogether 660 notifications from the London area out of 1,306 for the whole country. For the civil population the recorded case mortality rate amounted to 59 per cent., as against 53 in the previous year. It was lowest in London—52 per cent.—"as was perhaps to be expected in view of the fact that London practitioners have been officially instructed to notify cases of posterior basal meningitis, while no similar instruction has been issued elsewhere. If, in view of this fact, deaths from posterior basal meningitis are included in calculating the case-rate for London, it comes to 58 per cent., or nearly as high as elsewhere. The rate in the county boroughs was 61 per cent., in the smaller towns 63, and in the rural districts 60. These figures may have very little bearing upon the real fatality of the disease, as many slight cases are doubtless overlooked, and notified cases are not always confirmed on verification, but they do form some measure of the prospects of recovery of cases sufficiently typical to be recognized." The deaths in the civil population showed a decline of 44 per cent., and the deaths of non-civilians (449 in number) were fewer by 26 per cent. than those of the previous year, but in the absence of a return of the military population these figures are largely meaningless. In 1916, as in 1915, the majority of the cases occurred in the first two quarters; 68 per cent. of the total deaths of the year were returned for the first half of 1916, as against 78 per cent. in 1915.

### The Newcastle Orthopaedic Centre.

The Orthopaedic Centre at Newcastle-on-Tyne, to which the Army Council upon the representation of the Ministry of Pensions has arranged to make a grant of £10,000, will be an extension of the Royal Victoria Infirmary and will ultimately become part of that institution, but during the war it will be staffed by the military. Soldiers, both before their discharge and after they have become pensioners, will be treated there. After the war the Ministry of Pensions will have a claim upon the beds.

# Ireland.

### Enniskillen Guardians and their Doctors.

At a recent meeting of the Enniskillen board of guardians a letter was read from the Local Government Board stating that no steps seemed so far to have been taken by the guardians towards reinstating the dispensary medical staff or arranging for their resumption of duty; in face of the gravity of the situation, the Local Government Board again urged the guardians to place the doctors at once in charge of their districts and thereby make efficient provision for the medical care and treatment of the sick poor. The guardians by their resolutions and advertisements had admitted that the old salaries were inadequate, and the adoption of a new suitable scale was therefore unavoidable in present circumstances, and ought to be formulated as soon as possible and submitted for sanction. Letters were also read from Dr. T. Hennessy, Irish Medical Secretary of the British Medical Association, and from Dr. R. Marley Blake, President of the Irish Medical Association. Dr. E. Stephenson, Local Government Board Inspector, was present at the meeting of the guardians and asked them to appoint a committee to go into the matter. The guardians had exhausted their resources; they had tried everything to get doctors, but they had not adopted the most obvious plan—to go into

conference with the doctors. Although the doctors had acted a little hastily in resigning—they must forgive him for saying it—the guardians were not without blame in the matter. The salaries they had paid to their medical officers were altogether inadequate for the services rendered. The guardians themselves had since admitted that by offering a much larger remuneration when advertising for doctors to fill the vacancies of their former medical officers. The *Fermanagh Herald*, in an editorial article headed "The Poor Law Scandal," says that the action of the Enniskillen board of guardians in again ignoring the request of the Local Government Board to make immediate and efficient provision for the medical care and treatment of the sick poor in the union is a grave scandal, and is deserving of the condemnation of all classes of the community. For six weeks the union has been without dispensary doctors, and were it not for the kindness of the medical men who have voluntarily treated a number of serious cases free of charge, the deadlock would have been productive of serious, and perhaps tragic, results. Any one who has read the speeches made at the meetings of the board of guardians for the past few weeks must come to the conclusion that the attitude taken up by the majority of the members was actuated by a feeling of wounded pride and vanity, because the doctors tendered their resignations, and that no attempt was made to consider the question on its merits. On two previous occasions the medical officers applied for an increase of salary, and the facts stated by them in support of their claim could not be controverted, yet on both occasions the board derisively rejected their application.

# Correspondence.

## PRIMARY SUTURE OF WOUNDS.

SIR,—The paper by Sir Anthony Bowlby, in the JOURNAL of March 23rd, embodying as it does material of the highest possible value, should be widely read and carefully studied. Sir Anthony has had a unique opportunity of watching the work at the casualty clearing stations and of following the changes that have gradually come about in the treatment of wounds since the beginning of the war.

Evolution is usually so slow a process that all the steps of its advance can rarely come within the purview of a single generation. That of aseptic surgery—from Pasteur's discovery of the cause of putrefaction, through the genius, the unceasing labour, and the tireless energy which Lister brought to bear upon its application to the treatment of wounds—covered a period of many years. But during the war we have seen all the stages in the establishment of a vital principle taking place under our very eyes. It is, however, no new principle that has been evolved; it is nothing more than the vindication of aseptic surgery. I do not use the term in that narrow and trivial sense which distinguishes antiseptic and aseptic according to whether chemicals are or are not employed, as if there existed two different systems. No one who reads Sir Rickman Godlee's *Lord Lister* can fail to realize that Lister saw clearly the vital principle which underlies all modern surgical technique—namely, that if microbes could be excluded from wounds no suppuration would occur; that if their presence could not be altogether avoided, then the fewer there were the better chance would the tissues have of dealing with the infection. He realized that chemicals could so damage the tissues as to make them more vulnerable to microbic attack, and that foreign bodies were harmful in wounds which were not germ-free. The problem to which Lister chiefly devoted his attention was the exclusion of microbes from clean wounds, or the prophylactic treatment of wounds deliberately made by the surgeon. The technique built upon the foundation laid by Lister had reached a high, indeed, an almost perfect state of development by 1914, and what the respective advocates of "aseptic" and "antiseptic" surgery were disputing was really a matter not of principle, but of detail.

What surgeons were confronted with in 1914, however, was the problem of the already infected wound. Some, instead of seeking to vindicate the principles of aseptic surgery under this supreme test, ransacked the chemists' shops in the vain endeavour to find some germicidal panacea. But whilst this was going on Sir Almroth Wright was demonstrating that it was to nature that we must look for the solution of the problem. The rediscovery of this fundamental principle came from the laboratory, and justice requires it to be acknowledged that once again the practical surgeon is indebted to the pathologist. Neither brilliant colours nor pungent odours can replace an efficient surgical technique.

Sir Almroth Wright told the surgeon to look to surgery and not to chemistry for the solution of the problems raised by the wounds of war. The advocates of the various antiseptics which have from time to time been put upon the market have themselves admitted the truth of this doctrine, the directions for their employment being almost invariably prefaced by the statement that the preliminary opening up and thorough cleansing of the wound, together with the removal of all foreign bodies and dead tissue, are essential for success. "Bipp" affords a good illustration. Here was an ointment compounded of paraffin, bismuth, and iodoform, which, placed in a wound, was to exercise a continuous antiseptic action during the healing process. Assuming such action to be possible, then the cleaner the wound can be got by mechanical means, the less paste will be required; and if the quantity used is an index of the state of the wound at the completion of the primary operation, it follows that those wounds must be the cleanest, and will heal best, from which the paste is altogether omitted. Moynihan[1] writes that: "It is almost certain that in the perfect mechanical cleaning of the wound lies the secret of the (Morison's) method." The truth of this conclusion is established by the practical results which Sir Anthony Bowlby quotes. The greatest good that has resulted from this preparation, as well as from others, is a demonstration of the paramount importance of efficient surgery.

One of the points in Sir Anthony Bowlby's paper which calls for criticism is his opinion of the chronological order in which primary closure of wounds came to be employed. Colonel Gray was, I feel sure, advocating the excision and suturing of cranial wounds long before the closure of wounds of the knee-joint was being practised, and the following quotation from a paper by Harvey Cushing,[2] written after his experiences in France in 1915, has a bearing upon the question:

> "What is," he writes, "of paramount importance is to make a most thorough exploration and repair at the first sitting, usually with a flap incision away from or circumscribing the wound. . . . This reflected flap of scalp should be accurately closed . . . in order to ensure primary healing with scalp protection for the denuded dura or brain; and if drainage is advisable, it should be from the distant angles of the wound. . . . This, I am aware, is quite contrary to the generally accepted method of local enlargement of the wound with subsequent direct drainage. . . . This principle of exploration through a distant or flap incision, with subsequent closure, has been put into practice by a number of the more successful operators."

Sir Anthony Bowlby says:

> "Injuries" (that is, of the skull and brain) "which had been treated in the early days by drainage with bad results, were now treated by surgical excision and primary suture of the scalp with infinitely better results."

This would seem to throw the blame for early bad results upon the drainage, whereas in reality it was the lack of efficient surgical treatment at the primary operation which was responsible. From quite early days the closure of the scalp wound, after thorough surgical cleansing, was advocated both by Colonel Gray and myself (and later by Surgeon-General Wallace). The different plastic methods devised for procuring a whole scalp with which to close the cranio-cerebral wound, and the question of temporary distant drainage, are points of detail which do not affect the main proposition.—I am, etc.,

PERCY SARGENT,
Lieut.-Colonel R.A.M.C.

London, W., April 3rd.

## REAMPUTATION.

SIR,—In the BRITISH MEDICAL JOURNAL of August 25th, 1917, a most interesting paper by Mr. W. Sampson Handley was published on a method of flapless amputation, with subcutaneous division of the bone at a higher level.

[1] American Addresses, 1917.
[2] *The Military Surgeon*, June, 1916.

The feature of the method was the division of the bone with a Gigli saw introduced subcutaneously. As the subcutaneous introduction of the saw proved difficult I have substituted for it an open introduction, and am now convinced that Mr. Handley's method thus modified will, if generally adopted, rob reamputation of all its terrors.

Previously I had always approached a reamputation with misgiving. There never was any satisfactory way of cutting off the necessary amount of bone to obtain flaps, and violent recrudescence of sepsis was always set up. In one case I was dividing the femur with a chisel, and when half through it the rest of the femur split up as far as the small trochanter, thereby tearing a perforating artery, haemorrhage from this on the following day requiring ligature of the common femoral.

By Mr. Handley's method the bone is got away with the greatest ease, without any risk of haemorrhage, and with a minimum of disturbance to the tissues, and consequently of sepsis. Instead of cutting back the flaps to get out the bone, he removes the bone to make the flaps, a revolutionary proceeding of inestimable value. Mr. Handley's method transforms a severe major operation into an almost trivial minor one.—I am, etc.,

London, W., Feb. 9th. PAUL BERNARD ROTH.

## THE NATURE OF THE RHEUMATIC POISONS.

SIR,—In a note on "The Variation in the Specific Gravity of Urine and its Relation to Disease" (*Lancet*, June, 1917), I endeavoured to show, as a result of twenty years' observation, that the rheumatism and chorea following scarlet fever and other infectious diseases are caused by the retention of katabolic toxins or tissue waste. I based my belief on the fact that the urine in these cases falls in specific gravity and continues in this condition long after the albumin, usually following scarlet fever, has disappeared: a circumstance plainly showing that the glomeruli, as indicated by the appearance and the early disappearance of albumin, have been the first to suffer injury from the toxins and high temperature of the preceding fever, and are the first to recover, but that the more lasting injury as shown by the continued low specific gravity of the urine has fallen upon those cells in the kidney—namely, the tubular epithelium—whose function it is to exert a selective activity on the blood and to eliminate the products or toxins of katabolism.

Much has been said of the absorption of tonsillar and dental toxins as a cause of rheumatism, chorea and cardiac troubles. It would, however, be scarcely an exaggeration to say that 25 per cent. of human beings are going about in apparent health with chronicly disordered tonsils, the crypts frequently blocked with secretion in a high state of decomposition, and yet many of such cases suffer little inconvenience therefrom. But with regard to dental toxins, I am able to prove from my observations in examining recruits, that scarcely one in 500 is without one or more carious teeth, and that many cases with undoubtedly septic mouths show no symptoms whatever of rheumatic, cardiac, or nervous disease.

Rheumatism or its associates will, however, supervene so soon as the renal tubular epithelium is sufficiently injured by the absorption of tonsillar or any other toxin to lower its vitality, and thus hinder its action; the other conditions following as a consequence of the auto-intoxication resulting from the retention of the products of tissue waste: conditions which neither the tonsillar nor the dental toxin acting alone is of sufficient virulence to bring about. Otherwise, the latter poisons must exist in sufficient quantity to induce a state of sapraemia or septic intoxication, or be of such toxic intensity as to set up septic infection; but whether these poisons be sapraemic or septicaemic, they must of necessity lead to toxaemic conditions differing widely from the rheumatism resulting from the absorption of toxins from organs chronicly diseased; the continued pale urine of low specific gravity constantly associated with rheumatism of this type pointing to an injured tubular epithelium and to the consequent retention of katabolic toxins as the cause of the rheumatism.—I am, etc.,

Liverpool, March 9th. WILLIAM BRAMWELL.

# Obituary.

## ALFRED HENRY CARTER, M.D., M.Sc., F.R.C.P.,

EMERITUS PROFESSOR OF MEDICINE, BIRMINGHAM.

DR. A. H. CARTER, of Birmingham, well known beyond the borders of that city as the author of one of the best of the smaller textbooks of medicine, died at his residence, Abingdon, Berkshire, on April 4th.

He was born in 1849 at Pewsey, Wiltshire, where his father practised as a surgeon. He went to school at Epsom College, and received his medical education at University College, London. He took the diplomas of M.R.C.S. and L.S.A. in 1870, and at once volunteered for service with a field hospital during the Franco-German war. After his return he became house-physician at University College Hospital, and in 1871, the year in which he graduated M.B.Lond. with honours, was appointed house-physician to the General Hospital, Wolverhampton. In 1872 he took the degree of M.D.Lond., and his long connexion with Birmingham began with his appointment as pathologist to the General Hospital; he was afterwards house-physician to the same hospital. He took the diploma of M.R.C.P.Lond. in 1876, and was appointed assistant physician to the Birmingham Hospital for Sick Children; not long afterwards he became physician to the Queen's Hospital. He became a Fellow of the Royal College of Physicians in 1891, and gave the Ingleby lecture in Birmingham in 1893. He took a prominent part in bringing about the closer connexion of the medical faculty of Queen's College with Mason College, and while professor of physiology at the former institution helped materially to improve and widen the scope of the teaching. For more than thirty years he was busily engaged as a teacher of clinical medicine, and during the later years of his time at Birmingham was joint professor of medicine. Dr. Carter not only took a large part in the medical life of Birmingham, but a share also in the public affairs of the city, serving for a time on the city council, and as a member of its health committee.

He was long an active member of the British Medical Association. He was vice-president of the Section of Diseases of Children at the annual meeting at Leeds in 1889 and president of that section at the annual meetings in Birmingham in 1890 and 1911. He was president of the Birmingham Branch in 1895–96, and was at one time a member of the central Council. He was also president in 1896–97 of the Midland Medical Society. In 1901 he received the degree of M.Sc. from the University of Birmingham. He was J.P. for the county of Worcester and Lieutenant-Colonel R.A.M.C.(ret.).

He retired from practice in 1913, but when war broke out was anxious to do his share; for a time he acted as physician to the hospital established by Lady Norman at Wimereux. Afterwards he served in the hospital ships *Aquitania* and *Britannic* in the Mediterranean, and later was consulting physician at Tidworth for the troops on Salisbury Plain. He was twice mentioned in dispatches for valuable services. He had to relinquish his military work last June owing to a breakdown in health. Before he was taken ill last summer he had almost completed a valuable paper on cerebro-spinal fever founded on 93 interesting cases he had collected, but he was not able to complete his report.

We have already mentioned Dr. Carter's chief publication, the *Elements of Practical Medicine*, which reached a tenth edition in 1912. The book had the qualities which distinguished the author: it showed not only a wide acquaintance with medicine and physiology, but a well-balanced and orderly mind, which placed every fact in its logical sequence.

Dr. Carter was twice married and is survived by his second wife and a daughter. His younger son died of wounds received in Flanders in 1915, and his elder son died some time ago of illness.

The funeral took place at Abingdon on April 8th.

THE death occurred on March 10th of Dr. PETER GALLOWAY, who had practised for the past seventeen years at Spalding. He received his medical education at the University of Aberdeen, graduating M.B., C.M. in 1881.

and practised for some years at Willingham, near Gainsborough. Dr. Galloway was a member of the Holland Division of the British Medical Association. He leaves a widow, one daughter, and one son, Dr. Norman Galloway, who is serving with the R.A.M.C. in British East Africa.

DR. GEORGE ROGER PARKER, the oldest medical practitioner in Lancaster, died on March 11th after a long illness. He was educated at the Royal Grammar School, Lancaster, and St. Bartholomew's Hospital. He took the diploma of M.R.C.S. in 1875 and that of L.R.C.P.Lond. in 1877. He held the post of M.O.H. for the borough and port of Lancaster from 1886 to 1910. He was the senior medical officer to the Royal Lancaster Infirmary, having been appointed thirty-six years ago, and was president of that institution in 1908. He leaves two sons, Captain G. M. Parker, Australian Medical Service, and James I. Parker, a sheep farmer in Australia, who is at present serving with the Australian Veterinary Corps at the front, also one daughter, the wife of Dr. W. A. Rail of Capetown.

AMONG the victims of the recent air raids on Padua was Dr. ELIO DE AMBRIS, who continued the work of his master Lombroso. He was the author of treatises on degeneration and criminality.

# Universities and Colleges.

## UNIVERSITY OF LONDON.

AT a meeting of the Senate on March 20th Professor A. D. Waller, F.R.S., and Dr. S. Russell Wells were reappointed director and treasurer respectively of the Physiological Laboratory. Dr. E. W. G. Masterman has been added to the panel of University Extension Lecturers. The Gilchrist Studentship for Women has been awarded to Mary K. F. Lander of the London (Royal Free Hospital) School of Medicine for Women.

## UNIVERSITY OF DURHAM.

ARRANGEMENTS are now completed for the compilation of the register of parliamentary electors of the University of Durham. All graduates, including those who have taken a bachelor's degree, are qualified to be registered. Particulars will be sent on application (enclosing a stamped addressed envelope of foolscap size) to the Registrar, University Offices, Durham.

At the Convocation held on March 30th the following degrees were conferred:

M.D.—C. E. De Silva, J. R. D. Holtby, H. D. Senior, C. R. Wilkins.
M.D. FOR PRACTITIONERS OF FIFTEEN YEARS' STANDING.—C. U. Ind.
M.B.—E. G. Anderson, J. A. Berry, J. Gilmour, H. Sterne-Howitt.
B.S.—E. G. Anderson, J. A. Berry, J. Gilmour, I. Soliman, H. Sterne Howitt.

## UNIVERSITY OF EDINBURGH.

AT the spring graduation ceremony on April 4th the following degrees were conferred:

M.B., B.CH.—Eva M. Clark, H. R. Goldberg, W. A. Gray, Martha L. Hamilton, W. G. Hughes, G. Lange, D. O. Macdonald, H. B. Mackenzie, A. R. C. M'Kerrow, J. S. Mann, D. J. Micah, *J. C. Morris, Annie C. Roberts, G. M. S. Smith.

* With second class honours.

## UNIVERSITY OF GLASGOW.

THE following degrees were conferred on April 4th:

M.B., CH.B.—*A. B. Stich, *A. Kennedy, *Lydia I. H. Torrance, Annetta G. T. Anderson, T. W. Carstairs, M. Chalmers, Grace Chatterton, A. E. Cochrane, Margaret O'R. Gallagher, Mary B. Gillespie, G. O. Grant, J. C. Hendrie, Alison M. Hunter, Margaret T. M'George, W. S. L. M'Leish, D. Macqueen, J. Nicolson, Agnes P. Routledge, Dorothea H. Suttie, J. J. Treanor, W. A. Walker, J. A. White, G. Young.

* With commendation.

## CONJOINT BOARD IN SCOTLAND.

THE following candidates have been approved at the examinations indicated:

THIRD EXAMINATION.—J. H. Bain, T. A. du Toit, J. A. S. Campbell, G. C. Field, D. D. Fernandes, J. Campbell, A. F. Caddell, J. B. W. Telford, A. A. Lamaletie, T. F. Kelly, A. Gold, J. Murray, S. H. Waddy. *Pathology:* H. A. Newton, R. McKinnon. *Materia Medica:* D. Mackay, W. Campbell, W. Barton, Jessie M. L. Wright, J. MacGlashen, J. R. McCubbing, Agnes M. Hill, Janet A. A. Sang, R. Smith, Gracie O. D. Evans, Anup Singh Narula, G. M. S. Lindsay.

FINAL EXAMINATION.—H. W. Howatson, S. A. Faulkner, A. E. Hempleman, Indra-narayan Borrah, G. H. C. Harding, A. P. Robb, D. C. Howard, R. H. Malome, P. Vertannes, E. E. Bronstorph, D. M. MacLeod, J. H. Blackburn, A. Parker, T. H. J. Douglas, H. Millar. *Surgery:* A. S. Hughes. *Midwifery:* J. J. van Nirkerk, D. A. Walpola, A. H. B. Hudson, R. J. Patchett, A. S. Hughes. *Medical Jurisprudence:* H. McIlroy, Jatindra Kumar Sen, N. J. Patterson, I. R. MacPhail, R. J. Patchett, R. C. Bell, R. A. Cooper.

# Medical News.

THE maximum retail price of butter has been fixed in Paris at the equivalent of 4s. 2d. a lb.

A REVISED edition of Taylor's Tables for calculating weekly meat rations is published by Effingham Wilson, and can be obtained through booksellers, price 6d.

THE late Dr. Elizabeth Garrett Anderson left estate of the gross value of £24,098, the net personalty being £15,806.

ACCORDING to the latest estimate of the (American) National Association for the Study and Prevention of Tuberculosis, based largely on the results of the examination of recruits and drafted men for the new army, when about 2 per cent. of men of draft age in the country at large were found to be tuberculous, it is estimated that the number of active cases of tuberculosis in the United States is probably between two and three millions. At present 43,000 beds are available, but 50,000 more are needed.

ACCORDING to the *Neue Preussiche Zeitung* the loss of young male life has been so large that parents of girls in Germany are looking out for careers that will render them independent of marriage. The number of women who desire to become teachers is in excess of requirements, and in Prussia alone there are about 4,000 women medical students. Schools have been established for training girls to be librarians, sick nurses, and children's nurses.

DR. CHARLES S. MYERS, F.R.S., Lieut.-Colonel R.A.M.C., Director of the Psychological Laboratory, Cambridge, will give the second of two lectures on present-day applications of experimental psychology at the Royal Institution of Great Britain, on April 18th, at 3 p.m. The first lecture dealt mainly with the results which experimental psychology has yielded, and may be expected to yield, in the selection of individuals for work requiring special skill, in the prevention of industrial fatigue, and in the application of scientific management to industrial conditions. The principal subject of the second lecture will be the application of the teachings of modern psychology to the proper understanding and treatment of cases of nervous breakdown.

DR. EMILE ROUX recently reported that of the staff of the Pasteur Institute, normally numbering 200, 126 were mobilized in August, 1914. Of these 41 were medical men, 3 chemists, 6 veterinarians, and 76 officers and soldiers. Most of the laboratories had to be closed, only those for rabies, diagnosis, cholera and typhoid vaccination, animal vaccines, and serumtherapy continuing at work. Notwithstanding this curtailment of its activities the institute has rendered enormous services to the armies. Every French army is provided with a laboratory of its own on a large scale and a hospital for contagious diseases. There are more than two hundred laboratories worked by the institute. It has supplied to the army more than nine million doses of antityphoid vaccine. It also furnished the Serbian army with vaccine. Special services were established for malaria and dysentery. At the beginning of the war only 150,000 doses of antitetanus serum were available; within a few months the amount was increased to four million doses. At the beginning the black troops were decimated by pneumonia, and the institute prepared a vaccine which stopped the epidemic.

LIEUT.-COLONEL G. A. CASALIS DE PURY, S.A.M.C. (*Paris méd.*, 1918, viii, No. 3), contributes an interesting note on the medical history of the Basutos which, besides telling the old story of the evil effects of the first contact of natives with the so-called civilization of adventurous Europeans, brings out the sequence of syphilis and malignant disease on a virgin soil. In 1830 his grandfather settled among the Basutos as a missionary, on Livingstone's advice, and was followed there by his son and grandson (Lieut.-Colonel de Pury) as medical men. Until the Kimberley diamond fields were opened up the Basutos lived a happy, healthy, patriarchal life, without prostitution or syphilis, and entirely free from malignant disease, which, however, was known among the few white settlers and the neighbouring Boers. But with the advent of the diamond industry syphilis invaded the Basutos, and then, after a time, malignant disease, especially between 30 and 40 years of age, appeared. Later, tuberculosis, particularly of the lungs, became increasingly frequent, as has often been observed in similar circumstances. Lieut.-Colonel de Pury, after quoting the familiar example of syphilis as a disposing factor in carcinoma of the lip and tongue, records a family with many instances of the two diseases combined, and expresses his belief in a hereditary syphilitic diathesis for malignant disease.

# Letters, Notes, and Answers.

The telegraphic addresses of the BRITISH MEDICAL ASSOCIATION and JOURNAL are:

1. EDITOR of the BRITISH MEDICAL JOURNAL, *Aitiology, Westrand, London*; telephone, 2631, Gerrard.
2. FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate, Westrand, London*; telephone, 2630, Gerrard.
3. MEDICAL SECRETARY, *Medisecra, Westrand, London*; telephone, 2634, Gerrard. The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin.

The address of the Central Medical War Committee for England and Wales is 429, Strand, London, W.C.2; that of the Reference Committee of the Royal Colleges in London is the Examination Hall, 8, Queen Square, Bloomsbury, W.C.1; and that of the Scottish Medical Service Emergency Committee is Royal College of Physicians, Edinburgh.

## LETTERS, NOTES, ETC.

### "BEAT" HAND.

THE correspondent who asked a question on this subject in the JOURNAL of February 2nd criticizes the reply given and reinforces his objection by quoting various authorities. We, however, cannot accept his view. The interpretation of the law given in our answer is that adopted, we believe, by every county court judge in Great Britain and Ireland. The question is purely one of law, and the Boilermakers' Society would no doubt be able to get an opinion or raise a test case. The other alternative would be to collect evidence that "beat" hand is specific to the employment of riveters, and obtain a modification of the law.

### REST IN SANATORIUM TREATMENT.

DR. EDWARD E. PREST (Ayrshire Sanatorium, New Cumnock) writes: We need not be surprised that sanatorium treatment is so often a failure, when apparently it is so little understood. In your issue of April 6th Captain Morriston Davies makes the following statement: "The avoidance of reinfection and intercurrent respiratory infections, the hygienic life, and the use of exercise, are its chief weapons." If it be remembered that *rest* is the most important therapeutic factor in the treatment of early cases of pulmonary tuberculosis, failures when this is not enforced are easily explicable.

### TREATMENT OF LEPROSY.

WE have received the following cablegram from Dr. Emanuel Roberts of Colombo, Ceylon: "Have discovered specific for leprosy; report of cases cured and progressing will follow."

### MOSQUITOS: OILING OF PONDS.

C. Y. suggests that an article by Dr. W. M. McDonald, M.O.H. Antigua, B.W.I., in the *Journal of Tropical Medicine* of November, 1916, should be consulted as to the various anti-mosquito measures, including the application of oil.

### TREATMENT OF MENINGITIS.

CAPTAIN H. M. CADE, R.A.M.C. (Officer in Charge, District Cerebro-spinal Fever Laboratory, Ipswich), desires to learn from Mrs. Fysh in what forms of meningitis she recommends as treatment the application of tincture of iodine to the shaven crown (p. 416). In the three cases (out of four) which she claims to have saved in Colombo, was the diagnosis made on clinical grounds only or on the chemical, cytological, and bacteriological examination of the cerebro-spinal fluid? The diagnosis of meningitis, he says, can only be confirmed by the results of lumbar puncture, and the nature of the infection can only be decided by adopting this method. Of all forms of meningitis, that caused by the meningococcus seems to be the least fatal, especially if treated on rational grounds. He would not care to rely on painting the head with tincture of iodine in a case of meningococcal meningitis, when early lumbar puncture and the intrathecal injection of a specific serum holds out such good prospects of a cure, except in those fulminating cases which are invariably fatal.

### CAUSATION OF SEX IN MAN.

DR. W. E. ROPER SAUNDERS (Backworth, Northumberland) sends the following case, which may be added to the other records elicited by the review of Dr. Rumley Dawson's book on the causation of sex in man published on January 5th: Mrs. S. was operated on when she was 16 years old for an ovarian tumour, and the ovary was, according to the operator, completely removed. She was informed at the time of the operation that whatever children she had would always be of the same sex. When 23 years of age she was delivered of a male infant, and three years later, on April 2nd, 1918, to her great surprise of a female child. I think that a case like this goes some way to prove that a single ovary—the right in this case—provides ova giving rise to children of both sexes, and that the actual factor determining sex is yet to be found.

### PARIS HOSPITALS AND THE THEATRE TAX.

L'ASSISTANCE PUBLIQUE, which is responsible for the administration of Paris hospitals, has long derived part of its revenue from a tax on public performances. In 1908 it received about £200,000; in 1913 about £300,000. During the early months of the war the theatres were closed, and the receipts fell in 1914 to about £150,000, and in 1915 to about £100,000. In 1916 they rose to £190,000, and in 1917 to £250,000.

### APPEAL FOR THE FAMILY OF THE LATE DR. KITE.

DR. ARTHUR E. GILES (10, Upper Wimpole Street, W.) and the Rev. P. M. WATHEN (Welwyn, Herts) write: We shall be obliged if you will allow us, through your columns, to thank those who have so kindly contributed to this fund, and to say that we will gladly welcome any further contributions, as the amount so far received still falls a good deal short of what is required to give adequate help to Mrs. Kite and her daughters. The amounts received are as follows:

| | £ | s. | d. |
|---|---|---|---|
| "A Country Brother," Bridge of Allan ... ... | 1 | 0 | 0 |
| "A Nottingham Practitioner" ... ... ... | 1 | 0 | 0 |
| Dr. Josiah Beddow, Exeter ... ... ... | 1 | 1 | 0 |
| Dr. John Brown, Blackpool ... ... ... ... | 0 | 10 | 6 |
| Dr. Abraham Cohen, London ... ... ... ... | 1 | 1 | 0 |
| Dr. George Crichton, London ... ... ... ... | 0 | 7 | 0 |
| Dr. Wm. Davidson, Bournemouth ... ... ... | 0 | 10 | 6 |
| Dr. Arthur Giles, London ... ... ... ... | 10 | 10 | 0 |
| Mr. Cecil Graham, London ... ... ... ... | 0 | 10 | 6 |
| Dr. C. O. Hawthorne, London ... ... ... | 1 | 1 | 0 |
| Dr. C. F. Leslie-Spinks, Bournemouth... ... ... | 0 | 10 | 6 |
| Dr. Mary Rathbone, Liverpool ... ... ... | 2 | 2 | 0 |
| Dr. Septimus Sunderland, London ... ... ... | 1 | 1 | 0 |

### THE JOINTED-POLE TRENCH STRETCHER.

MAJOR G. H. COLT, R.A.M.C.(T.F.), writes to draw attention to a jointed-pole trench stretcher (see figure) designed by him for use in narrow, traversed, or winding trenches from 18 in. to 28 in. wide, that is to say, in the type of front line trench in which all devices so far tried for moving a badly gassed or wounded man have failed. In a trench less than 28 in. wide bearers cannot pass a right-angled corner when carrying a short-poled stretcher; while owing to its irregular movements and ill-balanced weight the strain on them is great, and their hands are apt to be knocked about. Moreover, the patient is carried upright, is often badly shaken by the tilting, and may even fall out. Hence, his removal is often left until nightfall. With the jointed-pole stretcher he can be moved at once, and

most of the difficulties are overcome. He is carried comfortably in the Fowler position, he cannot fall out, and his position is the best for all injuries as far down as the knee. For injuries below the knee a splint may be used. In this apparatus the weight is evenly distributed between the two bearers, and is borne by a direct shoulder suspension without neck constriction, while the hands of the bearers are free to aid the patient or save themselves on uneven ground. The total weight of the apparatus is 22 lb. The original account of the measurements and experiments relating to the matter were published in the *Lancet* of January 22nd, 1916. In the illustration the apparatus is shown turning a right-angled corner. The chest band for the front of the chest should have been drawn horizontal. The apparatus is manufactured by Messrs. Waring and Gillow, 164, Oxford Street, W.1.


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